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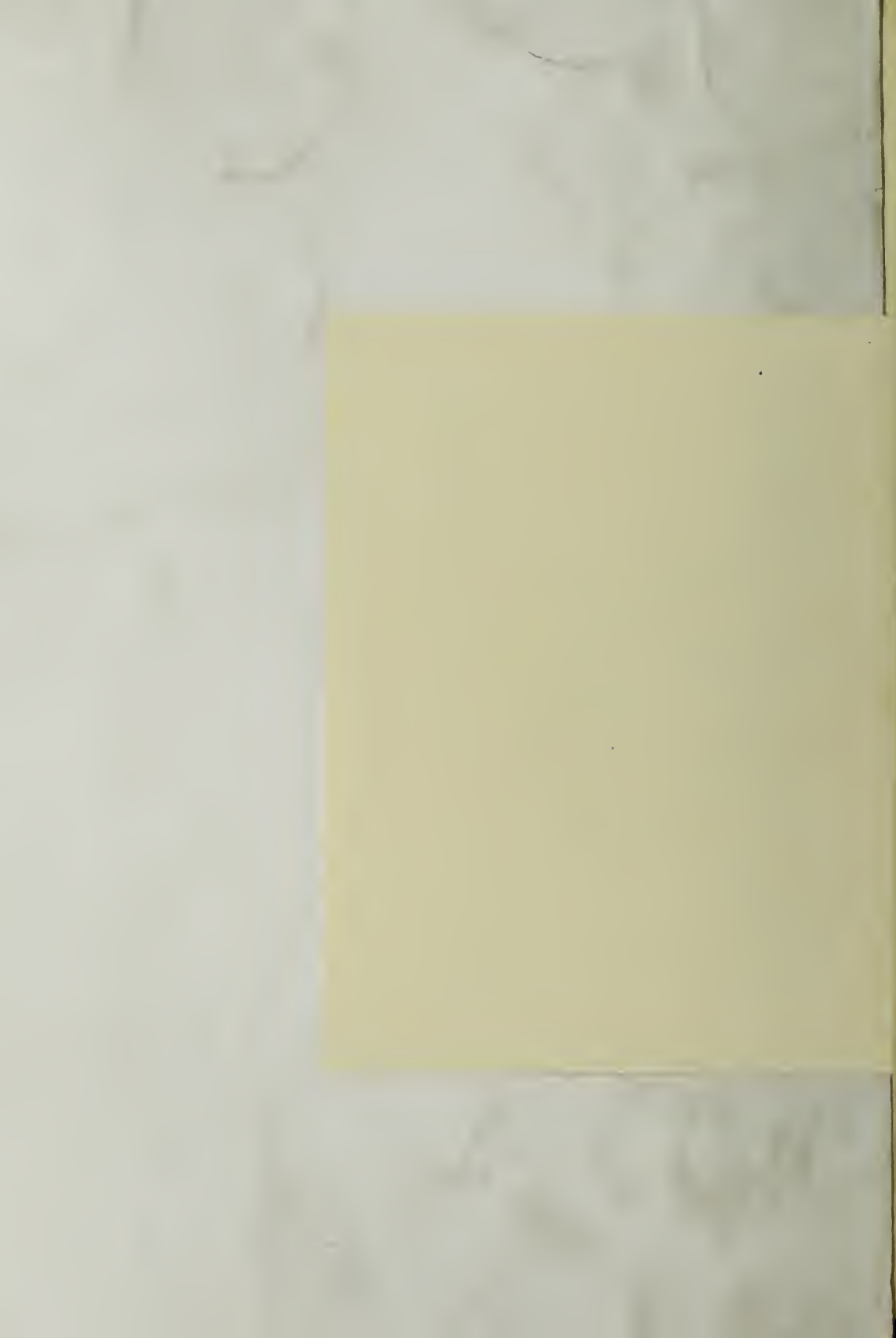
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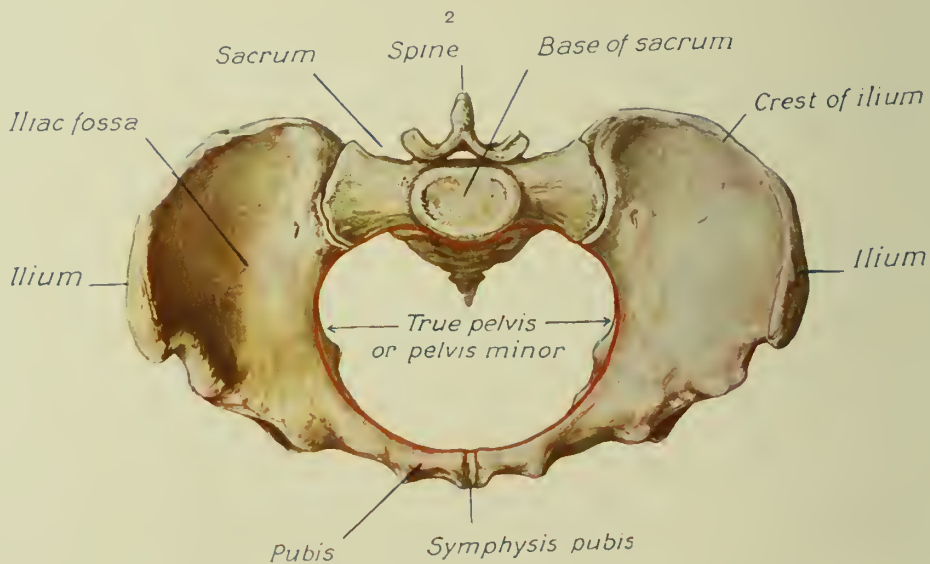
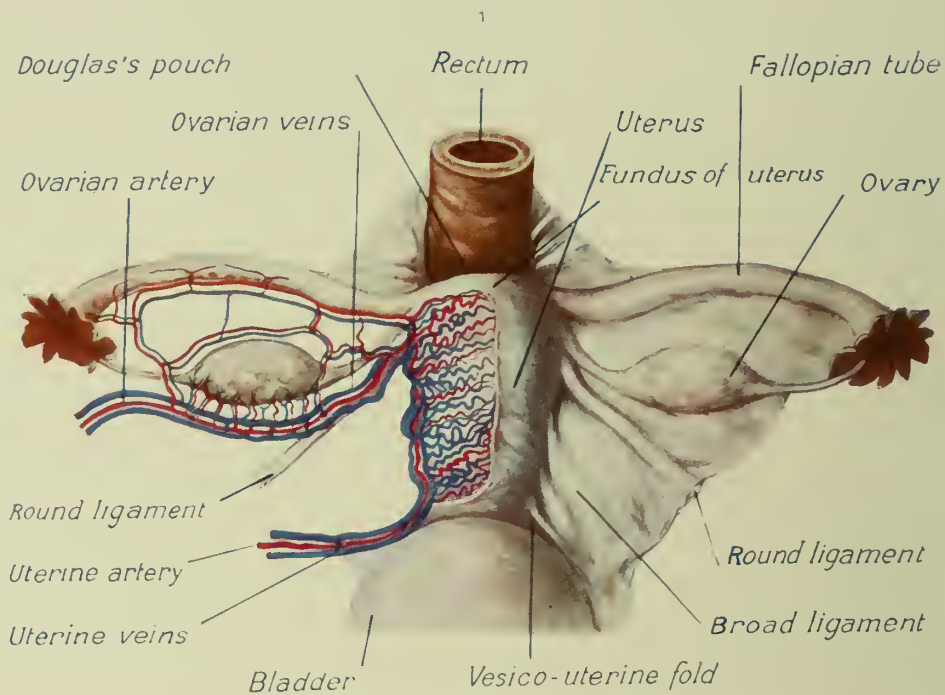


THE SCIENCE AND ART OF NURSING









1. FEMALE GENERATIVE ORGANS.

2. FEMALE PELVIS, SEEN FROM ABOVE.

# THE SCIENCE AND ART OF NURSING

A GUIDE TO THE VARIOUS BRANCHES OF  
NURSING, THEORETICAL AND PRACTICAL

BY  
MEDICAL AND NURSING AUTHORITIES

*ILLUSTRATED WITH COLOURED AND BLACK-AND-  
WHITE PLATES AND FIGURES IN THE TEXT*

IN FOUR VOLUMES

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# SCIENCE AND ART OF NURSING

## BOOK III.—THE PRACTICE OF NURSING (*continued*)

### CHAPTER XXXI

#### GYNÆCOLOGICAL NURSING

BY ETHEL PEARSON

How a Patient is Examined—Vaginal Douches—Medicated Douches—Intra-uterine Douches—How to use the Catheter—Washing out the Bladder—Gonorrhœa—Abdominal Operations—Vomiting and Flatulence—Retention of Urine—Peritonitis—Parotitis—Vaginal Hysterectomy—Repair of Ruptured Perineum—Repair of Vesico-vaginal Fistula—Leeching the Cervix—Vaginal Plugs.

IN gynæcological nursing there is much that is common to all other branches of the work, but I shall confine myself to those details that concern gynæcological cases.

**Examination of the patient.**—It is best for the patient to be in bed for this purpose, but if this is not convenient her corsets and outside

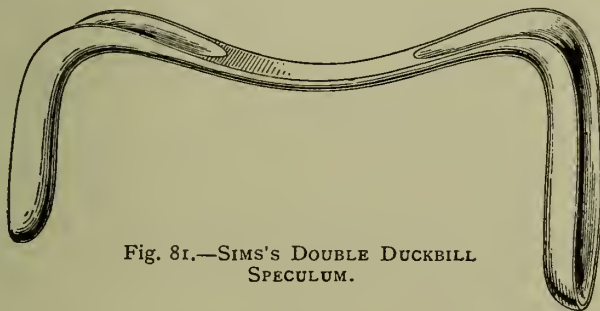


Fig. 81.—SIMS'S DOUBLE DUCKBILL SPECULUM.

garments should be taken off, and all other clothing loosened. The bowels should have been cleared beforehand by an aperient or by a soap

and water enema, and she should be desired to pass urine immediately before the examination. Let her lie on the bed or couch flat on her back with her knees drawn up and the clothes so arranged that the abdomen is exposed. The patient being in this position, the doctor will be able to make a bi-manual examination, *i.e.*, a simultaneous examination of the abdomen and

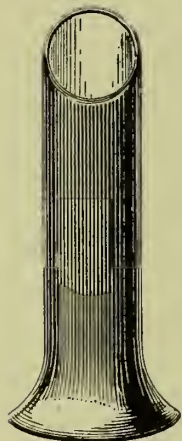


Fig. 82.—  
FERGUSSON'S  
SPECULUM.

vagina by touch. If the patient will take deep breaths and give slow expirations it will keep the abdominal muscles lax, and so facilitate the examination. To inspect the external genitals, the doctor may prefer her to assume the obstetric position. She must turn on her left side, draw the knees well up, the right knee being above the left, the buttocks right to the edge of the couch, and the head bent towards the knees. Cover her with a sheet or light covering to avoid unnecessary exposure. The nurse should have ready some lubricant such as glycerine and perchloride 1-2,000, or vaseline, for the doctor's fingers, a few pieces of lint, some cotton-wool, and a basin of the disinfectant preferred by the doctor. The instruments that may be required are: Sims's duckbill speculum and retractor, a Fergusson's speculum, a volsella, a sponge-holder or a speculum forceps, to hold swabs of cotton-wool, a uterine sound (Figs. 81-85). These must be sterilised before use. It is well to have a catheter at hand, in case the doctor should wish to satisfy himself that the bladder is empty.

**Vaginal douche.**—Douching is an important part of the treatment of many cases, as it is prescribed after most vaginal operations, in all cases of offensive discharge, and also for the

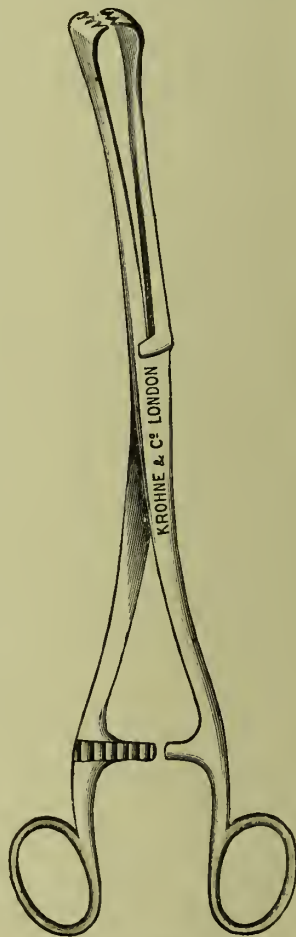


Fig. 83.—VOLSELLA.



relief of pain in the genital region. The patient must be placed on a douche-tin, bed-slipper, or basin, care being taken that it is sufficiently far under the buttocks to avoid wetting the bed. The best douching apparatus is an enamel or glass vessel, with indiarubber tubing and a glass or pewter nozzle, which should hang up about a foot above the bed. This ensures a gentle and even flow of fluid ; it can easily be kept clean, and the tubing can be boiled, if necessary. Failing this, a Higginson's syringe (Fig. 55, Vol. II., p. 204) will answer the purpose with the glass or pewter douche-nozzle fixed in the place of the ordinary enema nozzle. If this is used, it should be kept for douching, and not for also giving rectal injections. The nozzle, having been boiled, should be kept in antiseptic solution. Before the nozzle is inserted, the external parts should be cleansed. When the douche is finished, press the lower abdomen so that all the fluid is expelled from the vagina. Finally let the nurse see that the patient is left dry and comfortable. From two to four pints is the usual quantity of lotion required.

The following are the drugs commonly used for douches :—

FOR ORDINARY CLEANSING AND DISINFECTING PURPOSES

Lysol	.	.	.	.	3ss to Oj
Tinct. iodi	.	.	.	.	3j or 3jj to Oj
Condy's fluid	.	.	.	.	3ss to Oj
Perchloride of mercury	.	.	.	.	1-2,000
Sanitas	.	.	.	.	3ss or 3j to Oj.

Iodine must be used immediately if it is mixed with water, for it soon evaporates, and loses its colour and virtue.

If Condy's fluid be used the douche must be continued until it comes back unchanged in colour.

Both these drugs have the disadvantage of being very staining to linen. Sanitas is an excellent deodorant.



Fig. 84.—  
SPECULUM  
FORCEPS.



Fig. 85.—  
UTERINE  
SOUND.

If perchloride of mercury be used, the nurse must be careful to notice any symptoms of poisoning such as increased salivation, sore gums, or diarrhoea.

FOR AN ASTRINGENT

Zinci chlor.	.	.	.	.	.	5 grs. to Oj
Tannic acid	.	.	.	.	.	5jj to Oj.

FOR A SEDATIVE

Liq. plumbi acet. or glyc. plumbi acet. 5j to Oj  
Saturated solution of borax.

**Intra-uterine douche.**—This should never be given by a nurse unless it is ordered by the doctor, but a gynæcological nurse should know how to give it if necessary. An intra-uterine douche-nozzle

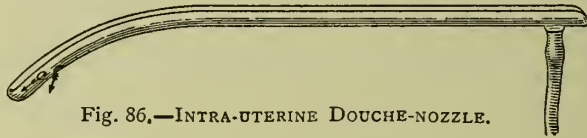


Fig. 86.—INTRA-UTERINE DOUCHE-NOZZLE.

(Fig. 86) is a narrow glass tube 10 or 12 inches long, somewhat flattened, grooved on the upper side, and slightly curved to correspond to the curve of the uterus. Some doctors prefer a pewter tube, which has the advantages of being unbreakable, and that it can be bent to any curve. For this latter reason it is useful for syringing Douglas's pouch through an incision in the vagina.

To give the intra-uterine douche, it is best to stand on the right side of the patient. With two fingers of the left hand find the cervix. With the right hand, sliding the nozzle along the two fingers which indicate the os uteri, insert the nozzle, using no undue pressure. Fill the tube with lotion before it is inserted so as to expel the air.

**Use of catheter.**—Catheters are usually made of soft rubber, but they can be had made of glass or celluloid. The latter are the least satisfactory, because they will not stand much boiling, and soon get rough. When about to pass the catheter the nurse should get together all she requires, viz.—the catheter, which has been sterilised by boiling and placed in a bowl of antiseptic lotion, sterilised oil if obtainable, or fresh vaseline, swabs and a vessel for the urine. The patient should

lie on her back. The nurse, having washed and disinfected her own hands, should stand on the right side of the patient. Separating the labia with her left hand, she should bathe the parts with lotion, taking care to sponge downwards, not using the same swab twice, in order to avoid the possibility of any vaginal discharge entering the urethra. She should then gently pass the lubricated catheter up the urethra until the urine begins to flow. Before withdrawing the catheter it is as well slightly to press the abdomen above the pubes to express any urine remaining. This applies particularly to cases of retention when the bladder has been much distended. In these cases the urine should always be measured. After use the catheter must be cleaned in water and some disinfectant, but it should not be used again even for the same patient without being re-boiled. Rubber catheters should be destroyed when the surface has got roughened, for then there is danger that irritation may be set up.

If the precautions above described are taken, the danger of cystitis is reduced to a minimum. Nevertheless, when every care has been taken, constant catheterisation will sometimes cause irritation of the urethra, and inflammation that may spread to the bladder. The signs of cystitis are pain and frequency of micturition, and thick and offensive urine. A bladder wash is usually prescribed.

**Washing out the bladder.**—For this purpose a catheter with funnel and tubing will be required. The process has already been described with sufficient fulness in the chapter on Practical Details of Nursing (Vol. II., p. 204).

**Gonorrhœa.**—This is a highly infectious disease. The nurse must be careful always to disinfect her hands after attending to a case of the kind. All douching apparatus should be marked and set aside for the use of such a patient. It is safest to destroy a rubber catheter that has been repeatedly used for a case of gonorrhœa. All purulent discharge from the vagina should be viewed with suspicion, and precautions taken accordingly, for though it may be harmless, it is likely to be gonorrhœal, and only bacteriological examination can decide the point.

**Abdominal operations.**—The patient should have a bath or be washed all over the night before, when an aperient must also be given, followed by a soap and water enema in the morning. It may here be mentioned that in an emergency case of ruptured ectopic pregnancy or Cæsarian section, an enema should not be given. In the former case it may

increase the hæmorrhage. In the latter it will stimulate labour pains and so increase exhaustion. Such patients should be troubled with as little preparation as possible before the anæsthetic.

To return to the ordinary patient, she may have a light, nourishing meal eight hours before the operation, and nothing solid afterwards, though about 6 oz. of beef tea is permissible two hours before operation. It is particularly important in these cases that the bladder should be empty, so the catheter must always be passed. If there is any difficulty about this, as there may be in cases where there is pressure from a tumour, it must be reported, so that the surgeon may judge whether there is any retention. A vaginal douche is usually given the night before, on the following morning, and immediately before the operation.

The patient should be dressed in a flannel jacket reaching down to her knees, fastened lightly at the back. This can be removed easily afterwards, if soiled, without disturbing her. She should wear stockings and have a blanket wrapped round the legs below the abdomen. Her hair should be done in two plaits, and false teeth must be removed. (For description of the duties of a nurse in the preparation of the room, etc., *see* Chap. XXIII., Section VII.) The ordinary abdominal binder for these cases is made of a straight piece of double calico or twill, or of flannel lined at the back with a piece of lint, to make it soft and comfortable to lie upon. It should be shaped at the waist, about 10 inches wide, and from a yard to a yard and a half long, according to the size of the patient. Some surgeons prefer a many-tailed bandage. This may consist of five or six strips of 2-inch bandage, so arranged that the edges overlap each other about half-an-inch. They are sewn on to a piece of lint at the back, which is smooth and comfortable for the patient to lie upon. Each strip is folded cross-wise in front and the last strip may be secured by a safety-pin. If the binder tends to slip up, stirrups should be made of a piece of soft bandage passed between the legs and fastened at the lower edge, front and back.

It devolves upon the nurse to see that the patient is put back comfortably in a bed ready prepared, with a water-pillow, draw-sheet, and knee-pillow. This latter is best rolled in a sheet, the ends of which can be tucked under the mattress, and so it is kept firm and in place. There must be a hot blanket ready to put next the patient, and in cold weather several hot-water tins well covered so as to avoid the



risk of burning her whilst she is still unconscious. One pillow for the head may be allowed when the patient has recovered from the anæsthetic. It is a comfort for the first few days to have a cradle to keep the weight of the clothes off the abdomen, but if this is used the nurse should see that the patient is kept warm enough. Coffee and brandy should be ready, so that an enema may be given without delay if deemed necessary by the doctor. A salt and water injection *per rectum* is often ordered when there has been much hæmorrhage. This also tends to alleviate the thirst, which is one of the worst trials of a patient after abdominal section. The nurse should immediately take the pulse and respiration, and must be on the alert for any symptoms of internal hæmorrhage, which must be reported without delay. (For treatment of shock and hæmorrhage, *see* Vol. III., pp. 64, 65.) The temperature, pulse, and respiration should be taken every four hours at first, and it is well to keep a written report as to the condition of the patient, her colour, vomit, quality of pulse, passing of urine or flatus, and the amount of nourishment taken. The feeding and after-treatment of these cases is the same as in any other case of abdominal section (*see* Vol. III., pp. 65-67).

*Vomiting and flatulence* are the two things which most trouble the majority of patients. For the ordinary sickness after anæsthetic, the remedy which, from personal experience, I have found most effectual is a feederful of hot water with a teaspoonful of bicarbonate of soda, drunk at a draught. This appears to act as a kind of stomach-wash. The patient vomits at once, without much retching, and is relieved for some hours, if not altogether. A mustard leaf to the epigastrium sometimes affords relief. For persistent vomiting a variety of drugs have been tried. Iced champagne in small doses is often successful. If the patient is unable to retain anything, nourishment must be given by nutrient enemata.

For flatulence a rubber tube well oiled and passed up the rectum will afford some relief, but if the pain continues to be severe, at the end of twenty-four hours, and even less, the doctor will generally allow a soap and water enema, with  $\frac{1}{2}$  oz. of turpentine in it, to be given, and this rarely fails to give relief. Other complications after abdominal section are :—

*Retention of urine.*—This is fairly frequent. Hot sponges to the vulva and pubes will sometimes help the patient to pass urine naturally,

but if this fails, and she feels uncomfortable, the catheter must be used about every eight hours.

*Peritonitis*.—The symptoms of peritonitis are: increasing rapidity of pulse, quick shallow respiration, incessant vomiting of a greenish or brown watery fluid, inability to pass flatus, causing distension of the abdomen. The patient becomes very restless, and there is an anxious expression, with a pinched look about the nose and mouth. These symptoms increase, and death occurs usually about the third or fourth day. Sometimes there is great pain, sometimes not. If it is present, morphia will relieve it. The thirst is very great, and as it scarcely affects the sickness, it is useless to deny the drinks for which the patient is constantly craving. In these unfortunate cases all that the nurse can do is to make the sufferer as comfortable as circumstances permit. In cases where peritonitis is merely local the above described symptoms are present in a lesser degree. They may gradually subside, and the patient will slowly recover.

*Parotitis* (inflammation of the parotid gland as in mumps).—Usually only one gland is affected. It may suppurate, in which case it is incised to let out the pus, and will then be treated as an ordinary abscess. If it is merely inflamed hot fomentations or poultices will give relief.

**Vaginal hysterectomy**.—For all vaginal operations, in addition to the ordinary preparations the vulva must be shaved. This may be done under the anæsthetic. The nurse should ascertain what is the surgeon's wish in the matter. The patient should wear a long flannel gown fastening at the back and long woollen stockings or drawers, as the legs and thighs must be uncovered during the operation. Sometimes forceps are left hanging on the broad ligaments after the operation. In this case a pad placed underneath them to support them lightly will take off the weight and relieve the dragging pain. Until they are removed, the patient must maintain the dorsal position, and must be moved with the utmost care, for fear of displacing the instruments, and of causing her additional pain. The nurse should not attempt to lift her by herself. Now, however, the vessels are more generally secured by ligature, and the after-nursing of the case is much simplified. The dorsal position is best for the first twenty-four hours, but after that, if she wishes, the patient may be turned on her side with a pillow to support the back. If hæmorrhage should occur, it will trickle

back, therefore when the patient is put back to bed a piece of lint should be placed under the buttocks. This can easily be drawn out, and the nurse will be able to see the amount of loss and show the doctor. There is generally a slight oozing, which need not cause anxiety. The bed is otherwise prepared as for an abdominal case, and the same method of feeding is followed at first; but these patients are generally able to take solid food sooner. After the removal of the forceps, if the discharge is offensive, the doctor will probably order a douche. This is best given at first with a large-sized catheter, with funnel and tubing. The catheter is inserted very gently just inside the vaginal orifice, so as to avoid any danger of injuring the recently-formed adhesions. At the end of a fortnight the douche can be given in the ordinary way. The patient is usually kept in bed for seventeen to twenty-one days.

**Repair of ruptured perineum.**—Before leaving the operation table the patient's legs should be tied together below the knees. Unless ordered to the contrary, she may be turned on her side as soon as she wishes, but she must make no effort herself that involves any strain on the parts. Some doctors prefer that the wound should be kept absolutely dry, and at rest, until the sixth or seventh day. In this case the bowels are confined, and the patient is not allowed to pass urine naturally, so that the catheter must be used every six hours. The rectal tube may be used to relieve flatulence. The patient is kept on fluid diet only, which may be peptonised if necessary. On the sixth day the bowels are opened by means of a dose of castor oil, followed in about four or five hours' time by an enema of warm olive oil, ℥viii to ℥x, given very slowly by catheter and funnel. The patient should be encouraged to retain it as long as possible. A pad to the rectum will assist her to do this. By this means the fæces are thoroughly softened before being passed. The more usual treatment, however, is to give an aperient on the third day, followed by a rectal injection of olive oil, as above described, and then to keep the rectum empty by rectal washes given night and morning, supplemented if necessary by aperients. In this way the danger of the repairs being broken down by the passage of scybala is avoided. After the rectal wash a douche is given. Every time the bowels are opened or urine is passed the parts must be syringed, thoroughly dried, and dusted with boracic or iodoform powder, and re-dressed with sterile gauze and wool. The dressing is



kept in place by a T bandage. This treatment must be continued until the stitches are taken out, and the wound quite healed. This will take about a fortnight. Diet should be light and digestible, and nourishing.

**Repair of vesico-vaginal fistula.**—After this operation it is most important that the bladder should not become distended, for fear of straining the stitches. The catheter must therefore be passed every four hours for the first week or ten days. The nurse must carefully note if, after leaving the patient perfectly dry, there is any escape of urine in between times, which would be an indication that the repair had broken down. Ordinary diet is allowed, but not more fluid than is necessary.

**Leeching the cervix.**—This is sometimes ordered when menstruation is scanty and painful. In order to apply the leeches, a Fergusson's speculum will be required. To insert this, lubricate it well with glycerine sublimate, 1-2,000, put the point in the vaginal orifice, and pressing the perineum back pass it upwards until the cervix is exposed. Leeches do not like vaginal discharge, so the parts must be well swabbed with warm water or sweetened milk. Then apply them, letting them stay on until they are full and drop off.

**Vaginal plugs.**—This is another form of treatment for chronic pelvic inflammation and pain. The plugs are made of rolls of cotton-wool soaked in glycerine, and tied with thread or silk to facilitate removal. They may also take the form of pessaries made of glycerine and gelatine. These are cleaner and more convenient. The effect of this is to cause a discharge of watery fluid from the tissues, which lessens the congestion and so gives relief. The plugs should be inserted when the patient is lying down.

In conclusion I would say that gynaecological nursing more than most other branches of the profession, calls, together with technical skill, for those pre-eminently nurse-like qualities gentleness, patience, cheerfulness, and sympathy. The good nurse must ever be full of delicacy and consideration for the feelings of her patients, especially in performing those offices which, whilst matters of routine to her, are perhaps new and disagreeable experiences to them. Then those suffering from pelvic trouble are frequently of a nervous, irritable temperament, difficult to deal with. In cases where the continual wearisome ache of chronic pelvic pain has produced that condition of nervous

prostration known as neurasthenia, rest, food, and sleep may be the treatment prescribed by the physician, but I think it is not too much to say that the success of the treatment depends in a large measure on the tactful and discriminating management of the patient (and perhaps, it may be added, of unwise friends) by the good and capable nurse, and on the mental and moral atmosphere she is able to create.

• • I should like to acknowledge my indebtedness to Dr. Herman for his kind help in the writing and revision of these pages.—E. P.

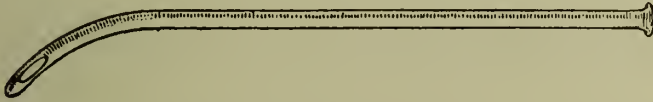


Fig. 87.—FEMALE CATHETER.

## CHAPTER XXXII

### THE NURSING OF HEART AND OTHER AFFECTIONS

BY ELEANOR C. BARTON

Pericarditis—Endocarditis—Chronic Affections of the Heart—Aneurysm—  
Peritonitis—Nephritis—Gall-stones—Ulcers.

HEART affections may either be functional, that is, affections due to disordered function, and not to disease of any part of the organ, or they may be organic, that is, affections in which some part of the actual heart structure—the valves, the muscle of the heart wall, or the inner or outer linings of the organ—is damaged.

Organic diseases, again, may be divided into acute and chronic. The acute organic diseases which we shall consider are pericarditis and endocarditis.

#### PERICARDITIS

This affection, an inflammation of the sac in which the heart is contained, is found associated with acute rheumatism, pneumonia, Bright's disease, injuries to the heart, and other acute or chronic affections. As in pleurisy, the disease may be dry, or there may be effusion. The effusion may consist of a clear fluid or of pus.

**Symptoms.**—*Pain*, which may be well marked or very slight, and is generally felt in the region of the heart, that is, roughly speaking, over the sternum and the third, fourth and fifth left ribs.

There is often *fever*. Sudden increase in the temperature in acute rheumatism may indicate the onset of pericarditis. On the other hand there may be little or no fever.

The *pulse* is rapid and small, the *respirations* are somewhat hurried.

*Dyspnoea* may be marked, especially in cases of large effusion. There is often a general feeling of anxiety and restlessness.

**Nursing points.**—Patients must be kept absolutely quiet in bed, no excitement or worry or other disturbing influences being allowed, and as little exertion as possible permitted. They should be in a recumbent or semi-recumbent position, well supported by pillows.

An ice bag may be ordered to be applied (*see* Vol. II., p. 185). Leeches are sometimes ordered in these cases. Also blistering, either by blistering fluid or by flying blisters made of small pieces of plaster, either mustard or cantharides.

The diet should be light and nutritious, and if there is much effusion the fluids will probably need to be limited. Should the effusion increase largely in amount and the patient's symptoms become urgent, the pericardium may need to be tapped, and the same preparations should be taken by the nurse as have been mentioned under the head of pleurisy (Vol. II., p. 253).

#### ENDOCARDITIS

is an inflammation of the membrane that lines the cavities of the heart, and chiefly affects the valves. It occurs most commonly in cases of acute rheumatism, but in children may be present without any definite signs of rheumatism. It is also associated with chorea, or St. Vitus's dance, and with some other infectious diseases, pneumonia, etc.

The great object in the nursing of these cases is to secure complete rest in the recumbent position for a long period. It must be rest for both body and mind, and if successfully carried out may prevent chronic heart disease from supervening.

#### CHRONIC AFFECTIONS OF THE HEART

These are what is generally meant when a person is said to have heart disease. They usually follow on the acute affections, and are associated with embolism and other diseases.

**Symptoms.**—In young patients in whom the difficulty in the circulation, due to the disease, is overcome by Nature herself, there may be no symptoms at all, but in cases where the Nature herself has failed, or is failing, the symptoms are very marked. Chief among these is *dyspnœa* on exertion, and in bad cases also when at rest.

There is sometimes *cough*, which may be associated with blood-stained expectoration.

*Sleeplessness*, the patient often not being able to sleep at all except in an upright position.

*Fainting attacks*, quick, feeble or irregular pulse, sometimes very slow.

*Edema*, beginning in the extremities and involving thighs, labia, scrotum, abdomen, and even the back.

*Blueness* of the face, lips, ears, nose and finger tips, especially on exertion.

Attacks of *palpitation*.

Generally more or less *digestive disturbance*, flatulence, etc.

Scanty *highly coloured* urine.

Often marked *restlessness* and *irritability*.

**Nursing points.**—The nurse will require an abnormal amount of patience and invincible cheerfulness in very trying circumstances, the nursing of these cases being often very difficult. The patient may want continually to change his position. Relief may often be afforded by propping him up in bed with a bed rest or pillows. Where there is much oedema he may sometimes be allowed to sit with his legs out of bed, but this should only be with the doctor's permission.

A special heart chair has been designed with a padded piece in front, on which the patient can rest his arms when leaning forwards.

The urine should be measured and the quantity noted, as often improvement in the patient is judged by increased urine. A careful watch must also be kept on the pulse. Sometimes tapping of the abdomen or puncturing of the legs is advised.

Owing to the often oedematous state of the skin in patients suffering from heart trouble bed-sores are likely to form, and are very difficult to heal. They should be carefully guarded against by the nurse.

#### ANEURYSM

is a localised dilatation of an artery caused by some injury or strain or disease of the wall of the artery. This weakens the artery at a certain spot and the weak part bulges under the strain of the blood circulating through it. It may occur in any artery of the body, but perhaps the most common are aneurysms of the aorta and of the popliteal artery at the back of the knee joint.

**Symptoms.**—There may be no outward signs of the presence of an aortic aneurysm, or on the other hand there may be a large *pulsating swelling*, perfectly visible and in some cases only covered by the skin.



The chief danger of an aneurysm is that it may rupture, giving rise to alarming hæmorrhage, which may prove fatal in a short time.

Other symptoms are due to pressure of the swelling on the surrounding parts, nerves, blood vessels, etc.; hence there may be severe *pain* and *œdema* from the pressure on these parts. In aortic aneurysm there is often bad *dyspnœa* due to pressure on the trachea and on the large bronchi. There may be alteration in the *voice* and in the sound of the *cough*. The pressure effects may of themselves prove fatal. Sometimes the *pulse* is smaller in one wrist than in the other.

**Nursing points.**—The nursing of these cases can be most difficult and most trying, consisting as it does in endeavouring to make the patient comfortable and cheerful under the most adverse conditions.

Absolute rest in a recumbent position with no excitement and no exertion must be insisted upon. This is with a view to quieting the circulation by diminishing the work of the heart as far as possible, and so promoting the formation of a clot in the sac of the aneurysm. This clot may gradually become firm and strong, in which case the aneurysm is neutralised. With the same object in view a very limited diet, especially as regards fluids, is generally ordered, and the nurse may be required to weigh and measure everything that the patient takes. The patient generally bitterly resents this treatment, so that any success achieved largely depends on the skill and tact of the nurse. The bowels should be kept very freely opened, so that no straining may be involved.

#### PERITONITIS

Peritonitis is inflammation of the membrane lining the interior of the abdominal cavity and covering the viscera contained in that cavity. As a disease by itself it is extremely rare, though it is said to be sometimes caused by cold and exposure. It is common after injuries or wounds of the abdomen, and after perforation of one of the hollow viscera, such as the stomach or intestine, and especially of the appendix. In women it is frequently met with as the result of extension of disease of the uterus or Fallopian tubes. It may occur after abdominal operations. It is sometimes due to infection by the tubercle bacillus. It is fairly common in association with Bright's disease.

**Symptoms.**—*Pain* and tenderness in the abdomen, which are very marked, so that the patient cannot bear even the pressure of the bed-clothes. His appearance is characteristic; he lies in bed on his back,

generally motionless, the legs drawn up so as to relax the abdominal muscles. The face is pale and anxious, the nostrils are often pinched, especially in bad cases.

*Vomiting* is generally very persistent and troublesome.

The bowels are usually *constipated*, but there may be diarrhœa.

The *pulse* is rapid, and small and wiry in character.

The *respirations* are rapid and shallow and confined to the chest, so that the abdomen does not move at all during respiration. This is due to the increase of pain which would be caused by the descent of the diaphragm in abdominal breathing. The temperature may be raised, generally to a moderate degree. In the very worst cases there is no fever at all. Acute generalised peritonitis is usually speedily fatal.

**Nursing points.**—The patient will naturally be confined to bed. The weight of the bed-clothes should be supported by a cradle, or failing this a portion of a band-box can be used. A pillow may be placed under the knees to support them in the flexed position, which is the most comfortable one to the patient. The shoulders should also be supported by pillows in such a way as further to assist in relaxing the abdominal muscles.

Some surgeons attach great importance to posture in the treatment of cases of peritonitis. They advocate a sitting posture so that any fluid poured out may gravitate into the pelvis where it can be more readily dealt with, rather than diffused over the whole of the abdomen as in the recumbent position. No food must be given by the mouth, but small pieces of ice may be sucked by the patient to relieve thirst. While vomiting continues rectal feeding must be maintained by means of nutrient enemata, which should be given in small quantities every four to six hours. The administration should be very slow as the food is then more likely to be retained. Nutrient enemata generally consist of peptonised milk or beef tea or egg, sometimes brandy. The amount given at one time is usually about 4 ounces. Nutrient suppositories are also sometimes used. The rectum is washed out at least once daily with plain warm water when nutrient enemata are being given.

For the relief of pain, light hot fomentations can be used, when they can be borne, such as turpentine stupes and opium fomentations. The latter are made by using tincture of opium instead of the turpentine.



Special attention must be paid to the careful cleansing of the mouth which should be done at regular intervals, since in this disease sores are very apt to form about the lips.

The nurse must always bear in mind the extreme sensitiveness of the patient in this illness. Every necessary movement must be done with extreme gentleness, and every jar, such as might be caused by knocking against the bed or heavy walking in the room, rigorously guarded against.

#### NEPHRITIS

Inflammation of the kidney is commonly known as Bright's disease, from the name of the physician who first described it. It may be caused by exposure to cold and wet. It occurs in association with scarlet fever, of which it is a common complication, also in gout and lead poisoning, and sometimes in connection with pregnancy, when it constitutes what is known as eclampsia. A special variety of the affection is consecutive nephritis, so called because it follows on disease or injury or infection of the urinary tract, that is, the urethra, bladder or ureter. For example, it may follow an attack of cystitis due to the passage of a dirty catheter and the result may be abscess in the kidney, which never occurs in the form of nephritis described above as Bright's disease.

**Symptoms.**—The condition may be acute or chronic. The course of the acute form may be very indefinite, and it may pass without any clear line of demarcation into the chronic form.

*Pain* in the back and the region of the loins.

Changes in the *urine*, which is scanty (except in one variety of the chronic form). Instead of the normal 50 ounces in the twenty-four hours it may be reduced to ten, eight or six ounces. It contains albumen and often, in the acute cases, blood.

*Dropsy*, differing from the dropsy of heart disease in that it is always found in the most dependent parts of the body. In the early stages the eyelids are noticed to be swollen in the morning; in the evening the feet are swollen. In the later stages the swelling is most marked over the sacrum and back generally, when the patient lies on his back.

*Secondary inflammations*, such as pleurisy, pericarditis, and peritonitis, are not at all uncommon in severe cases of acute nephritis.

Supervening on the acute or chronic forms may be symptoms of *uræmia*, a serious and often fatal condition, which may come on

insidiously with headache, vomiting and diarrhœa, and still greater diminution in the amount, or even suppression, of the urine.

*Convulsions*, which resemble an ordinary attack of epilepsy, may be followed by a condition of stupor which deepens into coma.

Sometimes there may be a condition of temporary blindness, which is known as *amaurosis*, and sometimes attacks of *dyspnœa*, occurring especially at night, and known as uræmic asthma.

The appearance of a patient with nephritis is often very characteristic—the waxy, white complexion and puffy appearance of the face. The pallor is partly due to anæmia, and partly to the presence of the swelling.

**Nursing points.**—The patient should be kept in bed in a pleasantly warm room. The diet will probably consist almost entirely of milk and milky foods, and the nurse will be called upon to exercise all her ingenuity in devising tempting varieties of this staple nutriment. Plenty of fluid is generally recommended. A pleasant way of administering it is in the form of an imperial drink, which is made by adding a drachm of cream of tartar to a pint of boiling water, adding saccharine and flavouring with lemons. Another useful drink is barley water flavoured with lemon. The urine passed in the twenty-four hours should be carefully collected and measured, and a record, in the form of a urine chart, regularly kept. The nurse will often be required to test the urine for albumen. One method is by cold nitric acid placed in a test tube and a little of the urine gently added on the top of it; this is best done by means of a pipette. The presence of albumen is shown by a white line at the junction of the urine and acid. (Another method of testing for albumen will be found described on page 161, Vol. II.) The daily amount of albumen present in the urine can be roughly estimated by thoroughly boiling the whole column of the urine in a test tube, allowing the deposit to settle, and comparing the amount of the deposit with the remaining amount of clear urine. For instance, if the deposit occupies one-third of the column and the remaining two-thirds is clear urine, then the amount of albumen will be expressed as one-third.

If the urine is alkaline, a few drops of dilute acid should be added before testing for albumen by boiling.

As one of the principles of treatment in these cases is to make the skin and bowels take on some of the work of the diseased kidneys, it is important to have the bowels acting freely, and to promote as much as

possible the action of the skin, and constantly to guard against any cold or chill.

The patient should be kept warmly covered ; if desired a woollen night-gown can be worn. Hot air and vapour baths are often recommended. With the same object of promoting the action of the skin, pilocarpin may be ordered. In these cases the patient needs careful watching for any signs of depression, and should be kept between blankets. Bed-sores must be carefully guarded against, as the skin is delicate, and if it does get broken is hard to heal. During convalescence great care is still needed to guard against chill.

#### GALL STONES

This condition is known medically as cholelithiasis. Gall stones are substances formed either in the gall bladder, or less frequently in the ducts of the liver. They are composed of cholesterine, bile pigment, and lime salts. Often the nucleus of the stone is formed of bile pigment or a cluster of bacteria, the cholesterine and lime salts are deposited round this nucleus, and so the stone increases in size.

Gall stones vary in size, some being quite small, like gravel, and others large enough to block the bowel. There may be only one of them or there may be hundreds. They differ in colour, being green, greenish brown or brown. Some are very hard, others are brittle. They are most common after middle age, and generally occur in people who take little exercise, and are well fed, especially women. Whilst they remain in the gall bladder, as a rule they give rise to no trouble, unless the gall bladder becomes infected. They occur not unfrequently after typhoid.

When the gall stone, or stones, leave the gall bladder and get into the cystic duct or the common bile duct there arises the condition known as biliary colic.

**Symptoms.**—Very severe *pain*, so severe that there is sweating, vomiting and collapse, sometimes preceded by shivering and a rise of temperature. There is generally tenderness over the liver, and there may be *jaundice*.

The pain may last for hours or days, or even a week, but once the stone passes into the small intestine there is relief, and if there has been jaundice this gradually clears up.

**Nursing points.**—The chief indication is to relieve the pain as far as possible. In some cases hot fomentations or turpentine stupes or poultices

may prove useful. Sometimes a hot bath is beneficial by relieving the spasm. The patient should drink freely alkaline water such as Vichy or Carlsbad. The diet should be light and plain. The bowels must be kept well open. Careful watch should be kept on the stools to observe any stone that may be passed. The best way of discerning the stone is to mix the fæces with water and pass them through a wire sieve.

If an operation is decided upon, the nurse will be required to prepare the skin in the usual manner.

#### ULCERS

The medical description of an ulcer is molecular death of the part, a definition which distinguishes it from gangrene, which is death *en masse*. Popularly speaking an ulcer is an open sore formed by the destruction of the skin and of a varying depth of tissue immediately under the skin. It may occur anywhere in the body, but the position in which the nurse is most likely to have to deal with it is on the leg.

Ulcer is more common among the poorer classes, especially in those whose work involves much standing. It is often associated with varicose veins, syphilis and injury to the leg, etc. It may persist unhealed for a very long time, and even when healed is very apt to break down again. Ulcers vary in size, some chronic ones extending half-way or more than half-way round the leg. The surface of the sore is often covered with slough which may be remarkably foul smelling. In chronic cases the fact that the edges become hard and thickened helps to make healing very difficult. Some ulcers are painful, especially those in the neighbourhood of the ankle. It is a curious fact that however septic they may be there are never any constitutional symptoms.

**Nursing points.**—The great essentials are rest in a recumbent position and, especially in poor cases, good food. The next thing is to get the ulcer into a clean, wholesome condition. This may be done in various ways. Hot fomentations made either with boric acid lint, or with lint soaked in a solution of chlorinated soda, may be applied; these should be changed every four hours or oftener. A leg bath containing warm boric acid or perchloride lotion may be used. After such treatment the ulcer instead of being sloughy and dirty becomes covered with bright red granulations, and in some cases healing may follow.

Ulcers are sometimes ordered to be strapped; this is done by applying strips of plaster up the leg, beginning well below the position of the ulcer

and extending well above it. A "window" is cut in the strapping opposite the ulcer so that it can be dressed. Another method of treating the ulcer is by what is called Unna's paste or plaster (*see* Vol. III., p. 90).

Another form of treatment is known as Bier's method. This consists in the application of a tourniquet or firm bandage above the position of the ulcer, so applied as to increase the amount of blood in the limb below. The bandage must never be so tight as to produce coldness or blueness of the limb. It is usually applied for an hour or so twice a day, and the results are sometimes excellent.

Often when ulcers reach a certain stage of healing and then become sluggish, a stimulating lotion such as one containing sulphate of zinc is ordered. The great point to observe in applying this is, that the lint should be cut the exact size of the ulcer.

Skin grafting is sometimes resorted to, in which case the nurse will be expected to cleanse surgically the part from which the skin is to be taken. Plenty of warm saline solution is required for this operation. Saline solution is made by adding a drachm of common salt to a pint of boiled water. The sponges and instruments are kept in this, as ordinary antiseptics are too irritating.



## CHAPTER XXXIII

### MENTAL NURSING

BY PERCY T. HUGHES, M.B., C.M.(EDIN.), D.P.H.

#### I. THEORETICAL

The Brain as the Organ of Mind—Volition—Consciousness—Perception—Memory—Ideation—Reasoning—Judgment—Control and Will—Instincts, Appetites, and Emotions—Action of the Brain upon the Body—The Brain as Affected by Disease or Lack of Development—Diseased or Undeveloped Brain as Affecting the Body Generally—Sanity and Insanity—Classification of Insanity—Heredity—Stress.

THE effects produced by disease in any organ of the body cannot be fully understood until the action of the healthy organ has been carefully studied, and throughout this study it should always be remembered that when disease attacks any special organ or particular system the healthy action of every other organ and system of the body is adversely affected. This warning is most essential in the study of mental disease. It is notorious that in the medical and surgical wards of a general hospital very little attention is paid to the effects of disease upon the mental condition of the patient. It is true that delirium is recognised, but the fact that, owing to disease, a patient may become for the time being demented, difficult, irritable, and even deluded is most often ignored.

#### THE BRAIN AS THE ORGAN OF MIND

In the development of mind four primary factors are necessary:—

1. **Sense organs** to collect impressions from without the body.
2. A **nervous system** to carry these impressions to the brain.
3. A special portion of the brain to receive and to turn these sensory impressions into **mental** impressions.
4. A special portion of the brain to **record**, to **analyse**, and **compare** these mental impressions.

The healthy new-born child possesses all these factors. From the day of its birth, for example, light waves collected by the eyes beat upon

the retina (sense organ) and the impressions they produce upon the retina are carried by the optic nerves (nervous system) to the special centres of the brain whose duty it is to deal with vision (occipital lobes). Here these impressions are translated into the mental impressions of light. These mental impressions of light are next dealt with by the intellectual centres of the brain whose function it is to record, to analyse, and compare them; and finally a note is made in the book of memory as to their brightness, colour, etc. At the same time, all the other sense organs are collecting impressions, and by similar methods these impressions are being recorded in the intellectual centres of the brain. This ever increasing store of analysed impressions may be called Experience.

There is, however, another important factor which aids greatly in mind development, and this is the power to act—**volition**. For by intelligent action much assistance is given to the further analysis and comparison of the impressions recorded. For example: the infant receives two impressions of the colour red—one due to sunlight shining upon a ball of red wool, the other due to the heat of a glowing ember. Being able to act, the infant can experiment. It touches the one, and finds it soft and cool. It touches the other, and finds it hard and hot. Thus by its ability to act the infant is able to add to its store of experience.

We see, therefore, that the development of the mind depends upon the ability to receive, digest, and store all forms of sensory impressions, together with the power to experiment. We know that the muscles and organs of the body are improved and developed by healthy physical action, and it is also true that the Intellect is improved and developed by healthy mental action. Not only this, but it must be remembered that the one helps the other, and that in both practice tends to make perfect.

Having seen what machinery is necessary for healthy mental action, we may now study its working in the following order: Perception, Memory, Ideation, Reasoning, Judgment.

At the very commencement, however, we are met by and must consider the very difficult question, What is **consciousness**? We cannot define it, but we can say that it is a “portmanteau” word, which indicates the result of full mental action. We can also examine *some* of the contents of this “portmanteau.”



The structure of the human body is so complicated, yet so complete that every little cell of every organ and tissue of the body is able to send its influence to and to receive influence from the brain. Although the influence arising from or sent to any one cell is very small indeed, yet when all these influences are gathered together they form two very large streams of influence, one flowing to the brain from the body, the other from the brain to the body. This is the *internal* circulation of influence, and it is constant, continuing whether we are awake or asleep, though we have only a very general sense of its existence.

There is also an *external* circulation of influence. As we have seen, influences from without the body reach the brain by means of the organs of sense. All these sensory influences gathered together form a stream of influence from without the body, which flows to the brain. From the brain a stream of influence flows to without the body, which causes us to act, to speak, etc. Now this external circulation of influence is not constant, but is fiftful and uncertain, for when we are asleep its streams are practically dry, but when we are awake they are in full flood.

The intellectual centres of the brain have the vital power of receiving, analysing, and recording all these influences which affect them and which reach them by means of these two circulations. They particularly exert their power with regard to the external circulation, but also, though to a much less extent, with regard to the internal circulation. They also can *recognise* that they have this vital power. The result of all this is that there is a recognition of influence from *without*, of influence from *within*, and of vital power to think and to act. Consciousness arises with this recognition.

**Perception.**—This is defined as “the conscious recognition of the external causes of a given sensation.” Perception, therefore, depends upon sensation.

Now sensation arises from the stimulation of an organ of any one of the senses—(1) hearing, (2) sight, (3) touch, (4) smell, (5) taste, or of the “muscular sense,” by means of which we are able to judge of the amount of muscular force we exert.

Up to a certain point sensation may be fairly aptly illustrated by a mechanical example. When we switch on an electric light we send an influence along a wire which flows into and affects the lamp. This results in light. To produce any given sensation we stimulate a sense

organ (the switch) and thereby send a sensory influence along a nerve (the wire) which flows into and affects a certain centre of the brain (the lamp). This results in sensation (light). Before we can be said to "perceive," however, it is necessary for the intellectual machinery of the brain to come into action. The following is an example of perception: I hold in my hand a diamond ring. By means of the senses the following are some of the sensations which pass into my brain—through sight, the shape of the ring, the brilliantly flashing light of the stones; through touch, the coldness and the hardness of the ring; through muscular sense, the weight of the ring. Being fully conscious I am able to recognise, by means of my intellectual centres, that the disturbance caused within me by all these varied sensations passing into my brain, arises from this external object—this ring. As soon as this recognition takes place I am said "to perceive"—to form a "percept." It should be noted that in the example given the percept of the object (the ring) is compound; that is to say, it is made up of a number of simple percepts—of shape, of colour, of consistence, of weight, etc.

**Memory.**—By means of memory the intellectual centres of the brain have the power to make a note of and store up all the impressions which they consciously receive (percepts), and have also the power of referring to these notes and of making use of this store whenever they wish to do so. It is due to this power of memory that higher mental action is possible. Devoid of memory we should be devoid of experience—perpetual infants.

**Ideation.**—This is the power we possess of forming ideas or concepts. In the process of perception it will be remembered that owing to the object being actually before us and our senses being actively influenced by it, we were able to form a compound percept composed of simple percepts. In the process of ideation, however, there is no object to affect the senses. I have lost the ring, and a friend asks me what it was like. By making use of my memory I can draw on my store of percepts. I collect together again in my mind (re-collection) all the different impressions I received when I was actually holding and looking at the ring. I string together all the simple percepts I then received, and am by this means able to re-present before my mind a picture, a concept, an idea of the ring. This process of combining a number of simple percepts drawn from memory to form a mental picture (concept) is called ideation.

**Reasoning.**—This is the active part of the mental machinery by which we are able to find out the difference or similarity between two ideas (concepts). There are two forms of reasoning—*analytical*, whereby we try to find out differences between things apparently alike, and *synthetical*, whereby we try to find out similarities between things apparently unlike. For example: By analytical reasoning I can point out the difference between a Scotch Pine and a Fir Tree (*Wellingtonia*), the differences in their foliage, their general shape, and so forth. By synthetical reasoning I can show that both Scotch Pine and Fir Tree are the same in that they are both cone bearers (*Coniferæ*).

By means of reasoning we are able to compare, weigh, and measure the likeness or unlikeness of any two things or sets of ideas. Having compared, weighed, and measured, we can form an opinion. This opinion is termed a *judgment*. We can also by comparing, weighing and measuring judgments form a *new judgment*. The activity of reasoning is made use of in showing for the first time the likeness or unlikeness of two concepts or sets of concepts. To take an example of simple reasoning: I have a mind picture (concept) of the softness and springiness of feathers, and I have also a mind picture of a comfortable, soft, and springy feather cushion. I have some horsehair in my hand, and find that it also is soft and springy. By an effort of reasoning I bring the qualities of feathers and horsehair together for the first time, and form this judgment: that horsehair would make a good substitute for feathers in the filling of a cushion. Having satisfied myself by making a horsehair cushion that my judgment is sound, I have no need ever again to reason out the likeness of feathers to horsehair, and their likeness as suitable fillings for a cushion becomes fixed in my memory as a percept.

It will be clear that reasoning becomes more complex according to the number and complexity of the ideas which are associated, and upon which a judgment has to be formed. Examples of complex reasoning are found in the everyday work of, say, a medical man. He is called to a case. The patient is ill, and presents certain symptoms. By means of ideation he calls up mental pictures (concepts) of every disease that might give rise to the symptoms which the patient shows. Each of these mental pictures is composed of a group of symptoms. By reasoning he compares, weighs, and measures the group of symptoms which form each mental picture with the group of symptoms which he finds

in the patient, until he lights upon the mental picture which shows no difference from the actual picture which is presented by the patient. He is then able to make a diagnosis (judgment) as to the disease from which the patient is suffering.

**Judgment** can be defined as the result of comparing, weighing, and measuring any two concepts or sets of concepts, any two judgments or sets of judgments. A judgment is the final result of mental action.

**Control and Will.**—Much philosophic warfare has waged around the question of Will, and the contest seems to be unending. We may, however, simply define Will as “the sensation which arises before conscious action.”

In explaining this definition, it will be well if we first turn our attention to the word, “action.” Our actions may be grouped into three classes—(1) reflex, (2) automatic, (3) conscious.

(1) *Reflex action* is “action which cannot be controlled by an effort of will.” For example: Take a friend into a dimly-lighted room and examine the pupils of the eyes. They will be found to be large, or, as it is termed, “dilated.” Now suddenly flash a bright light into the eyes, and immediately you will see the pupils rapidly grow small and become “contracted.” This is called the “light reflex.” Now tell your friend to exert her will to the utmost to prevent this light reflex taking place. You will find that the most energetic exercise of the Will leaves the “light reflex” unaffected.

(2) *Automatic action* is “action which by practice can be performed without conscious effort.” For example, take walking. Compare the infant learning to walk with the adult full of business worries striding to his office. The former tries to walk, is conscious of every effort, and in learning to toddle fixes his every attention upon producing those movements of his legs which will bring him within reach of the hands outstretched ready to receive him. The latter, preoccupied and worried, exerts no conscious effort in his progress to his business. Indeed, so unconscious may he be of his progress that if he were asked as to what he had seen or whom he had passed on his way his mind might be a complete blank.

(3) *Conscious action* is “action commenced and completed by conscious effort.” Examples are unnecessary, and as this consciousness of effort is closely connected with Will, we can now return to the consideration of the definition of Will as “the sensation which arises before conscious



action." We have seen that we can act automatically—that is, without conscious effort, without that sense of willing ourselves to act. What, then, is the connection between Will and conscious acts? It can be simply illustrated as follows: Let us picture the intellectual centres of the brain as a kind of boiler, sensations being the water, perception, ideation and reasoning the fire, judgment the steam. Sensations, as we have seen, are supplied from both within and without the body; perception, ideation, and reasoning heat and boil them up, producing mental steam in the form of judgment. Now this steam produces a sense of pressure, and this sensation of pressure represents Will. For example: We see a brutal bully ill-treating a little child. The sensations (water) are abundant, the action of perception, ideation, and reasoning (the fire) intense, and this results in a sudden intense pressure in our intellectual "boiler." This sensation of intense pressure would in this instance be expressed in common language by the terms, "*bursting with rage*" or "*filled with indignation*."

Under *Control*, this sensation of bursting, this intense desire is relieved by consciously directing the pressure along various channels, and the result is conscious action. The circumstances which cause this pressure, which give rise to this sensation Will, have also set in motion the machinery of the intellect. There is present a restiveness and desire for action. The engine, with steam up, is ready to start; but it is intellect that drives the engine, it is intellect that decides the line of action, it is intellect that puts on the brake, and it is also intellect that may decide to let off all the steam (the pressure) into the air, thus preventing the engine from going along any line. In other words, intellect is at once engine driver, pointsman, and signalman.

**The instincts, appetites and emotions.**—Man is an animal with intellect added. All those tendencies which are called the instincts arise independently of the intellect, and are purely animal in their origin. These tendencies are inborn in every animal, and are very powerful in their influence. They are mainly concerned in influencing the animal in two directions: (1) to preserve its life, (2) to reproduce its species. Closely associated with the instincts are the appetites. These are the demands of the body for the necessities of life and for reproduction, such as the desire for food, for liquid, and the sexual desire. Closely associated with instinct and appetite are the emotions—joy, fear, love,

etc. These largely result from the gratification or the lack of the gratification of the appetites and the presence or the absence of any instinctive sense of danger to life.

#### ACTION OF THE BRAIN UPON THE BODY

Having thus briefly examined the action of the healthy brain as "the organ of mind," we must very shortly review its action upon the body. As has already been explained under the heading Conscience, the brain is not only influenced by every cell in the body, but sends out an equally minute influence. These influences are two, and they are called "trophic" and "sympathetic."

The **trophic** influence stimulates every cell to feed upon the nutriment supplied by the blood and to grow, or, if fully grown, to carry out all repairs necessary for keeping itself in full working order and healthy condition. The exact condition as to the healthiness or otherwise of each cell is reflected into the brain by means of the sensory and the sympathetic nerves.

The **sympathetic** influence is closely connected with the appetites and emotions—whether they arise from the instincts or the intellect. For example, joy and laughter affect the action of the liver. In experiments on a dog in reference to the secretion of bile, it has been found that when the dog was pleased and wagged its tail the flow of bile was increased, and that whenever it was annoyed and growled the flow of bile was reduced. With our knowledge that bile has much to do with the digestion of fat, it will be seen that the old adage, "Laugh and grow fat," is literally true. On the other hand, fear, as everyone has experienced, produces a most inconveniently increased action of the kidneys. Shame results in the production of a sudden increase in the blood supply to the face, which is called blushing.

The sympathetic influence not only produces effects upon the cells and organs of the body, but also affects the brain. Its messages reaching the brain, together with the sensations arriving through the sensory nerves, produce the feeling of bodily well being, of physical fitness, and of general healthiness.

#### THE BRAIN AS AFFECTED BY DISEASE OR LACK OF DEVELOPMENT

We have now to consider how the action of the healthy brain is affected by **disease** or by **lack of development**. As far as possible, each of the

mental processes will be considered in the same order as that already employed in explaining their healthy action.

We commence, therefore, with **perception**. In the explanation of sensation a mechanical illustration was given. It is easy to see that if owing to disease any part of the mechanism of a sensation is wholly or partially destroyed, or if owing to some error in development some part is missing or badly constructed, the sensation will be either entirely absent or considerably impaired. The defect may be in one or in several portions of the mechanism. It is obvious that if sensation is defective, perception will be imperfect, and that if sensation is absent perception cannot exist. Again, although these "mechanical" portions of sensation are quite sound, yet the intellectual centres may be absent or faulty, and in consequence complete absence of or only imperfect perception will result.

*Illusions and hallucinations* are the result of imperfect perception. An *illusion* is a false perception arising from the misinterpretation of the stimulation produced by an actual object. For example: A piece of string lies on the floor, and on account of some defect of my eyes, or of my vision centres in the brain, or of my intellectual centres, or of all three, this piece of string looks like a snake. I have formed a false percept (snake) of an actual object (string). Again: There is a high wind blowing, rattling the windows and roaring in the chimney; owing to defects in my hearing apparatus, these sounds seem to me to be a loud voice shouting foul names at me, bells ringing, etc. I am *illuded*.

An *hallucination* is a false perception formed *without* the stimulation produced by an actual object. Example: I am gazing into the clear blue sky; suddenly there appears a huge dragon spitting fire. There is no object, as in the case of illusion, which can be contorted into a dragon. There is nothing but clear space, yet the dragon appears. I am *hallucinated*.

**Memory.**—This faculty may be entirely wanting or impaired. Disease may wholly destroy the storehouse of percepts, or owing to some fault in development the storehouse may not have been built at all. Again disease may partially destroy the storehouse, or, owing to faulty development, it may be far too small. Again, although the storehouse is perfect, it may be that owing to absence of perception there are no percepts to store in it; or, again, if perception is faulty, the stock of percepts in the storehouse of memory is imperfect and of poor quality.



**Ideation.**—It will be clear that if in any way the powers of memory are impaired, or though unimpaired, hold a stock of percepts lacking in quality and quantity, then all higher mental action will be seriously affected. Let us take again the example of the diamond ring. If memory (storehouse of percepts) is faulty, then the whole, or a portion of the simple percepts (shape, coldness, hardness, weight) may have been lost. When, therefore, I try by means of Ideation to re-collect these percepts, the whole, or some part of them, is missing. The result of *all* being missing is that I can form no idea, am unable to re-collect at all, and can form no conception as to what the ring was like ; but if they are only partially missing, my idea—my conception of the ring—is hazy and imperfect.

On the other hand, my memory may be perfect, yet when the percepts are absent or faulty, owing to some defect in the mechanism of the senses, such as blindness, short sight, numbness of the fingers, etc., the result is much the same. In other words, to build up a perfect Concept we must have to hand all the necessary materials, and each one of these must in itself be perfect. But the power of Ideation may be absent or weakened. If absent, the materials are all there, but Ideation, the builder, is paralysed ; if weakened, although the materials are perfect, they are not properly made use of, with the result that the construction of the building (concept) is faulty. With Ideation defective the “ association of ideas ” is also defective, and both the conscious and unconscious production of mind pictures is weakened.

**Reasoning and judgment.**—As we have seen, reasoning is that higher portion of the mental machinery which weighs, measures, and compares all that is sent to it from the lower portions. It is clear, therefore, that if the lower portions of the mental machinery do not carry out their work properly, and thereby send up faulty material, then the judgment produced by reasoning will be defective. Before we can form a sound judgment upon any matter, we must have before us all the true facts. If some of the facts are only so called and not really true, then the judgment we form is warped, defective, and not sound. The machinery of reasoning itself must itself also be sound if it is to form sound judgments. If disease weakens its mechanism, or if owing to some fault in its development some part of the machine is lacking or defective, then although the material put into the machine is sound, the article (judgment) which it turns out will be faulty. In the same way,

a new judgment may be faulty, either owing to faulty reasoning or to defects in the judgments from which the new judgment is formed.

This leads us to the consideration of *delusion*. Since we are dealing with the effects produced by disease, it may be best to define a delusion as "a false belief (judgment) arising from diseased mental action." It must be remembered that many false beliefs exist which have their origin in lack of experience, lack of knowledge, and are therefore not due to disease, and cannot therefore be termed delusions. For example: The savage, ignorant of astronomy, believes that the fiery trail of a shooting star is the flight of a good or of an evil spirit.

Delusions are the result of faulty perception and of faulty reasoning.

*Faulty perception*.—Owing to some defect in the sense of sight, the piece of string, in our example of illusion, is distorted into a vivid picture of a snake. Reason, overwhelmed by the vividness of the faulty percept, accepts it as true, with the result that a delusion is formed.

*Faulty reason* as a cause of delusion may be illustrated by the same example, only in this case the fault is not due to the sensory impression. There is no fault in the sense of sight, but in this instance the disturbance produced by the percept (string) is not properly interpreted by Reason. A true percept of the object (string) is formed; but Reason, impaired by disease, argues that although the object has the appearance of string, yet it is, in fact, a poisonous snake, and in consequence a delusion to this effect is formed.

Another very common example of delusion arising from diseased Reason is where a kindly, disinterested action is regarded as the subtle and deceptive attempt of an enemy to produce a sense of security and thereby to lull to sleep caution and watchfulness.

**Will and control**.—If the illustration of Will be referred to, it will be more easy to understand how its production may be affected in many ways by disease. For example:—The water (sensation) may be absent, too little, or too plentiful. The fire (perception, ideation, reason) may be absent, dull, or too fierce. Varying results will be obtained if these factors are combined in various ways. For example: No water and no fire result in no steam (pressure). Much water and fierce fire result in much steam (pressure), and so forth. The sense of Will may, therefore, as a result of disease, be altogether absent, very slight, or unduly intense.

*Control* is one of the duties of intellect; but, as we have already

seen, intellect may be absent, or weakened by disease or by lack of development. By whichever cause intellect is impaired, the result is that control is to the same extent weakened. The steam (pressure) being controlled and guided by intellect, it is clear that if this control and guide is absent or weakened, every kind and variety of uncontrolled and misguided action may result.

**Instincts and emotions.**—Man, as we have said, is an animal with intellect (control) added. By means of intellect the animal lusts and passions are kept within bounds. Disease or lack of development may produce symptoms in two ways or by a combination of these two. Intellect alone may be affected or the body solely, or again both may be affected. If from disease or error in development intellect is absent, then the control of the animal side of the man is entirely lacking, with the result that the bodily appetites have full sway: the man is an absolute savage, he gorges himself with food, is grossly immoral, is murderously passionate or wildly happy. If intellect is weakened, then in proportion to the amount of control the man has, so is he more or less “savage-like” in his habits.

If disease or errors of development affect the body of the man, the animal lusts may be so increased as completely to overwhelm a quite healthy control. For example, take the diabetic: he has an intense thirst which must be assuaged. So intense is the craving for liquid that if he cannot obtain water he may even drink urine. Again, take the man suffering from chronic Bright's disease. Owing to the poisons circulating in his blood, which his diseased kidneys cannot remove, and which act on the brain cells, he becomes intensely irritable and liable to passionate, utterly uncontrollable, and even murderous outbursts.

#### DISEASED OR UNDEVELOPED BRAIN AS AFFECTING THE BODY

##### GENERALLY

We have now to consider how disease or lack of development of the brain and nervous system may affect the body generally. Both the trophic and sympathetic systems may be seriously disarranged. When, owing to general brain disease, the **trophic** influence of the whole body is lessened, then every organ and every tissue suffers—not a single cell is able to do its work properly, nor is it able to feed and repair itself. Let us see what is the result of this. The cells of the organs of digestion do their work badly, and turn into the blood stream

too little properly prepared food to satisfy all the cells of the body. Because of this, those organs (kidneys, etc.) whose duty it is to remove waste matters from the body are insufficiently fed, and moreover, owing to the lack of trophic influence, are unable efficiently to repair themselves. In consequence of this their work of scavenging is badly done. The blood, as a result, becomes almost poisonous, and, acting upon the brain, further clogs the machinery of the nervous system, thereby reducing further the stream of trophic influence. In other words, a "vicious circle" is formed, and things go from bad to worse.

#### SANITY AND INSANITY

It is by studying *conduct* that we are able to judge as to whether any person is sane or insane, and in this regard speech must be considered to form a definite part of conduct. Until a perfect system of "thought reading" is discovered, we can only form an opinion as to what is going on in the mind of a person by paying attention to his appearance, his actions, and what he says. It is clear, therefore, that a person may be very insane indeed, yet if his conduct gives no indication of mental disorder he will be regarded as mentally sound.

The law demands that before a person can be sent to an asylum he shall be medically examined and a certificate given which sets out the points in his conduct which indicate that he is insane. From this has arisen the popular fallacy that it is only these certified persons who are insane—a belief which is about as true as the statement that it is only those persons who, certified and removed to the fever hospital as suffering from scarlet fever, do suffer from scarlet fever. In point of fact the certified insane form only a portion of those who are suffering from the disease insanity.

To give a complete definition of insanity would seem to be beyond the wit of man. It may, however, be stated that it is only when the machinery of Reason is out of order that insanity exists. As we have already seen, Reason is the *process* whereby judgments are formed. If this *process* is at fault insanity is present. For example: In a person with defective eyesight the alarm and excitement produced by an illusion such as a snake should not be regarded as evidence of insanity. For, if the process of reasoning is sound, the fault of perception will be corrected, and the person will form the sound judgment that there is only



a piece of string on the floor, and that no snake is present. When, however, the eyesight and all the other senses being perfect, the process of reasoning is so defective that the true percept (string) is distorted into a snake, and, further, when this distortion cannot be corrected by Reason, then insanity is present.

**Classification of insanity.**—There is considerable confusion in the classification of insanity arising from the various forms which have been adopted. The three principal forms are grouped according to (1) period, (2) cause, and (3) symptoms.

*Period.*—This classification is according to the age at which insanity appears, and terms are used such as adolescent insanity, climacteric insanity, and so forth.

*Cause.*—Under this heading the insanity is labelled with what is considered to be the main cause of the breakdown, and terms such as syphilitic insanity and alcoholic insanity are employed.

*Symptoms.*—This classification consists in labelling the insanity according to the principal symptoms present. Thus we have mania, melancholia, dementia, etc.

None of these classifications, or their combinations, are completely satisfactory, and of recent years a classification based on more scientific principles has been introduced; but for the nurse the classification according to *symptoms* is by far the most useful, and will be adopted here. The nurse, however, should have an intelligent idea as to the effects of both cause and period upon the progress of any case.

The table on the following page shows in the first column the nine principal forms of insanity, classified according to **symptoms**, each of which will be fully described in a later Chapter. The second column shows under corresponding numbers the principal causes of each of these forms of insanity. Period in this table is looked upon mainly as a cause.

Although the second column of the table may appear at first somewhat formidable, it is really simple, for, except with regard to the "congenital" cases, the causes can be simply summed up in two words—*heredity* and *stress*.

## CLASSIFICATION OF INSANITY

SYMPTOMS	CAUSE AND PERIOD
	( <i>Heredity</i> as a cause may be combined with any of the following causes.)
1. { <i>Idiocy</i> . . } { <i>Imbecility</i> . }	1. Congenital.
2. <i>Epilepsy</i> . . .	2. <i>a</i> Congenital. <i>b</i> Acquired (Alcohol, &c.). <i>c</i> Organic (Local Injury—Tumours).
3. <i>Mania</i> . . .	A <i>Physiological Stress</i> : <i>a</i> Adolescence ( <i>Dementia Præcox</i> ). <i>b</i> Climacterium ( <i>Climacteric Insanity</i> ). <i>c</i> Puerperium ( <i>Puerperal Insanity</i> ). <i>d</i> Senility.
4. <i>Stupor</i> . . .	3, 4, and 5. B <i>Pathological Stress</i> : <i>a</i> Toxic (Alcohol—Drugs, &c.). <i>b</i> { <i>Septic conditions.</i> <i>Rheumatism, Phthisis.</i> <i>Syphilis, &amp;c.</i> <i>c</i> General bodily diseases. <i>Starvation.</i> <i>Debility.</i> <i>Shock.</i> <i>Exhaustion and Overwork.</i> <i>Sexual excess.</i>
5. <i>Melancholia</i> .	
6. <i>Recurrent Mania and Melancholia</i>	6. Stress ( <i>Physiological or Pathological</i> ).
7. <i>Delusional Insanity</i>	7. Stress ( <i>Physiological or Pathological</i> ).
8. <i>Dementia</i> . . .	8. <i>a</i> Primary (Alcohol, &c.). <i>b</i> Secondary (to acute forms of <i>Insanity</i> ). <i>c</i> Organic (Injury— <i>Apoplexy</i> —Tumours). <i>d</i> Senile ( <i>Arterial</i> ).
9. <i>General Paralysis</i>	9. Syphilis and Stress.

Faulty **heredity** is undoubtedly the most potent basis of insanity. What is true with regard to the breeding of animals—that poor stock will produce poor stock—is equally if not more certain in the case of man. This is borne out by the fact that, despite all the difficulties in obtaining the family history of patients admitted into asylums,



practically every asylum report shows that in 50 per cent. of the cases defective heredity (which includes insanity, imbecility, alcoholism, epilepsy, etc.) is present. In other words, the stock from which the patients spring is poor.

Let us now consider what is meant by **stress**. This is, perhaps, best illustrated by the example of a rope supporting a weight. The weight represents the ordinary every-day wear and tear of human existence, and the rope represents the normal power of the brain and body to support and cope with these. Now this weight is naturally increased, thereby producing a natural or normal increase of strain or stress upon the rope, at certain well-known times of life—*i.e.*, during the time of growth or adolescence, or during the period of "change of life" or climacterium, and in woman during pregnancy and child-birth. This extra strain on the rope is natural, and is termed *physiological stress*.

In addition to this physiological stress there are all the numerous additions to the weight on the rope, in the form of disease, shock, starvation, worry, and so forth, as shown in the table. Each one of these will produce an unnatural or abnormal strain on the rope, which is termed *pathological stress*.

In the ordinary healthy person the rope can easily bear not only the physiological stress, but very considerable pathological stress also. It may, and does happen, however, that the weight is thus so added to, and the stress in consequence so greatly increased, that a mental breakdown occurs.

When, on the other hand, the rope from the first is of poor quality (heredity) it is quite evident that it will be much more readily broken by stress of any kind. It may be unable to support even the normal physiological stress, as is exemplified in the case of the adolescent or climacteric insanities, or, if it is just able to withstand the normal strain, any addition to the weight in the form of pathological stress may at once cause a complete breakdown.

Of the various causes, two must be particularly noted, for both of them act with special severity upon the nervous system. They are *syphilis* and *alcohol*, and when, as is often the case, both are present, the stress produced is very frequently overwhelming. Moreover, syphilis must be considered to be certainly the essential cause of general paralysis of the insane.

## CHAPTER XXXIV

### MENTAL NURSING

#### II. PRACTICAL NURSING OF THE INSANE

Qualities required for Mental Nursing—Necessity for Vigilance—Relation of Nurses to Patients—Seclusion and Restraint—Employment—Amusements—Hygienic Surroundings—Sleep—General Cleanliness of Patients—Attention to the Mouth—To the Bladder and Bowels—Feeding—Administration of Medicines—Bed-sore—Trophic Sore—Temperature—General Diseases—Ulcerative Colitis—Surgical Conditions—Midwifery.

HAVING in the preceding chapter laid down a theoretical basis for the nursing of the insane, I now proceed to deal with those points which are common to all forms of insanity and additional to general nursing.

The nursing of insanity entails very grave responsibility, and demands the constant exercise of all the finest attributes of the true nurse. Modern enlightenment regarding the nature of insanity, together with the efforts of the Commissioners in Lunacy and the Medico-Psychological Association, are producing an improvement in the standard of mental nursing somewhat akin to that produced in general nursing by our "Lady of the Lamp," Miss Florence Nightingale. Both men and women of good education and high principle are now devoting themselves in increasing numbers to this the most difficult and exacting branch of a noble profession. No longer is the coarse, ignorant, sentry type of nurse tolerated, the old asylum terms "warder," "wardress," and "keeper" have rightly been abolished, and in modern hospitals for the treatment of insanity the term "attendant" is replaced by the title "male nurse." Nowadays every probationer nurse has to undergo a three years' course of rigid training, not only in anatomy, physiology, and general nursing, but in psychology and mental nursing, before being allowed to enter for the examination for proficiency in mental nursing.

**Qualities required for the work.**—The mental nurse, male or female, requires to be very observant, capable, and intelligent, kind and

sympathetic, tactful and firm, but, above all, must possess absolute self-control. The first lesson to be learnt is that every patient in the mental hospital is suffering from disease of the brain, and that, no matter whether he is dirty in habits, resistive, irritating, or grossly obscene, all these are but symptoms of the disease. The obscenity is as much a symptom of diseased brain as foul breath is a symptom of gangrene of the lung; and, therefore, to become angry with or to punish such a patient, would be as grossly wrong as to punish a patient who had a foul breath due to gangrene. Further, it should never be forgotten that every patient in the mental hospital is there for treatment, and that it is the duty of the nurse to assist in every way possible in promoting recovery.

In all institutions a certain fixed standard of discipline and conformity with daily routine is necessary, but in mental hospitals the difficulty in securing this standard varies with each different type of case. In every mental hospital or asylum a more or less complete classification of the patients is in force. Separate wards are allotted to the recently admitted cases, to the convalescent cases, to the turbulent, noisy, and refractory type, and, in addition, infirmary wards are set apart for those patients who are suffering from general diseases, such as pneumonia, phthisis, etc. There are, however, certain broad features in the nursing of all types of insanity which will now be considered.

**Necessity for vigilance.**—The mental nurse should cultivate a constant vigilance and thoughtfulness in anticipating that which may prove harmful to the patients. Nothing should be “taken for granted,” nor should familiarity ever be allowed to breed a contempt for possible danger. The nurse who argues that because nothing serious *has* happened nothing serious *will* happen, is not fit to belong to the profession. No attempt to point out all the directions from which danger or disaster may appear can here be undertaken. A few examples, however, may with advantage be noted, and, simple though they appear, it is truly remarkable how frequently failure in the observance of such simple and obvious precautions is found. For instance, medicines, poisons, knives, scissors, and so forth should always be kept under lock and key, or, if in use, should never be left out of the immediate and actual observation of a nurse. Watchfulness should be exerted to prevent patients from secreting any articles, such as pieces of glass, nails, bits of string, matches, and so forth, either in their beds or in their clothing or

elsewhere, and for this reason at uncertain intervals all the patient's clothing and bedding should be thoroughly searched. Again, when the door of a room which should have been locked is found to be open, care should always be taken, before locking the door, to look round the room to see that no patient is hiding there with mischievous or suicidal intent. The patients, further, should not be allowed to sleep with their faces covered by the bed clothing. It is not only an unhealthy habit, but especially in the case of epileptics or of suicidal patients, it is fraught with danger in that it may prevent the nurse observing that the patient is in a fit or is attempting suicide.

The nurse should become thoroughly acquainted with the mental and physical state of each patient, and by daily tactful inquiry and observation should ascertain whether or not there is any alteration. Should the nurse note, or even suspect, any alteration, it is her bounden duty to report this to her superiors, whether the alteration is in the nature of improvement or the reverse. This daily observation and reporting of changes in the condition of patients is one of the most important duties of a mental nurse, and it may be taken as an axiom that a daily, dreary, monotonous report of "No change" with regard to each and every one of the patients indicates strongly either laxity or lack of ability on the part of the nurse. This close observation should be quite unobtrusive, and should never be relaxed or lulled into a sense of false security, even though the nurse is employed in wards where all the cases are of the quiet, convalescent type. The tendency to relapse during convalescence is a most marked feature in insanity, and with symptoms of a relapse unobserved, catastrophe may result.

**Relation of nurses to patients.**—It should always be kept prominently before the patients that they are under detention only and solely because they are ill, and they therefore should be encouraged in every possible way to look forward hopefully to their ultimate recovery and discharge from the hospital. Undue familiarity between nurse and patient should be discouraged. It is bad nursing to make favourites of particular patients, as this causes, not unjustly, much discontent and jealousy, and may even give rise to delusions among the less favoured. To each and every patient the attitude of the nurse should be that of a friend, ready to do anything for their welfare, but equally ready and firmly, yet kindly, determined to prevent them from doing anything which is harmful. Promises should never be lightly given to patients, for if



not carried out a feeling of distrust and lack of confidence in the nurse is created, and for the same reason no patient should be deliberately deceived. The delusions or conduct of a patient should obviously never be made the ground for joking or teasing, and should never be discussed in the hearing of or with other patients.

In the daily close association of hospital life, it frequently happens that a very strong enmity, possibly delusional in origin, is developed between two or more patients. In such a case the nurse should always take care to keep these antagonists as far as possible apart and thus prevent quarrels and discord. With regard to quarrelling, it is unfortunately too true, and an almost constant feature, that, possibly owing to this daily close intimacy, the nursing staff allow petty personal antagonisms to arise amongst themselves. If this state of things should appear, it is essential that it should not be mentioned to or discussed with patients. Any nurse doing so is guilty of gross disloyalty to the nursing staff, and of an offence which is calculated to interfere seriously with the good tone and general discipline of the hospital.

To obtain conformity with the necessary discipline, it will be obvious that in wards allotted to the refractory class of cases, somewhat more rigid and unbending methods are necessary. But with whatever type of case the nurse has to deal, conformity to discipline should be obtained, if possible, by persuasion and not by force. It is remarkable how the tactful, gentle-mannered nurse succeeds, where one with a curt, martinet, military manner fails, and moreover not only fails, but provokes outbursts of resentment and even of violence. The nurse should always be fully self-controlled. Under no circumstances should signs of irritation, disgust, alarm or excitement be shown. This is especially necessary in cases where, after all efforts of suasion have failed, force has to be employed. Except in the case of emergency a nurse should never employ force single-handed. One or, if necessary, more nurses should always be summoned, when the patient will either quickly submit to superior numbers, or will be more easily controlled and with less danger of injury to either patient or staff. It is most important that any struggle or fall, however trivial, should be reported in order that the medical officer may examine the patient for possible injury.

**Seclusion and restraint.**—In dealing with restlessness or violence two methods may be employed, but only with the direct authority of

the medical officer. These are called seclusion and mechanical restraint. The law defines seclusion as the locking of a patient in a room between the hours of 7 a.m. and 7 p.m., and also directs that the exact duration of and reasons for seclusion shall be carefully recorded. Restraint is defined as the controlling of the movements of a patient's limbs by mechanical means, and the law directs that only certain forms of appliances shall be employed, and that, as with seclusion, the duration of and reasons for mechanical restraint shall be carefully recorded. Restraint is very seldom employed, and is usually only required for surgical reasons; but with regard to seclusion, there is a considerable difference in medical opinion with regard to its value. Consequently the frequency with which it is used varies greatly in different institutions. For the nurse, however, all that is necessary to remember is that neither seclusion nor restraint can be employed without the definite order of a medical officer, and that when these measures are employed a careful note must be made of the hours of their duration.

**Employment** must be regarded as one of the most valuable methods of obtaining improvement in mental cases. By its means the energies and attention are directed along healthy channels, and are thereby distracted from all that is morbid and unhealthy. Not only this, but when the patient is employed his general health is improved, and this naturally tends to arrest the progress of disease in the brain, and to promote repair of nerve tissue. A good mental nurse will never acknowledge defeat in the attempt to persuade a patient to undertake useful employment. Example and tactful suasion are the keystones of success. Restlessness, destructiveness, vicious habits, impulsiveness, and the resentfulness arising from detention are all greatly decreased when patients are usefully employed. So marked is this that the improvement which passes on to convalescence and ultimate recovery is frequently observed to date from the time a patient was first persuaded to undertake some useful work.

A note of warning must be given with regard to employment. It is not an uncommon belief amongst patients that if they make themselves useful to the nursing staff their detention in the hospital may be prolonged on this account. The nurse should make it quite plain that some employment should be undertaken because it is good for the patient, and not because it is of value either to the staff or the institution. This warning is all the more necessary, because there is a



tendency amongst mental nurses to regard occupations other than those which are of use to the institution or themselves as valueless. It should, therefore, be borne in mind that if an unwilling patient can be persuaded to undertake even some simple work, such as tatting, the arranging of flowers, etc., this alone may prove to be a stepping stone to more useful and health-giving employment.

**Amusements** are of value for the same reason that employment is beneficial, but in a more limited way. They are distractions from the daily routine and from morbid tendencies, and, being pleasurable, act beneficially. They also tend to break down that unsociability which is so marked a feature of insanity. The nurse should, therefore, encourage and unite with the patients in playing games, such as draughts, chess, cards, billiards, cricket, and so forth, and thus assist in promoting a healthy social spirit. Occasional concerts, theatrical performances, dances, and fêtes still further aid in dispelling any tendency to monotony.

**Hygienic surroundings.**—The four essential conditions of a hygienic environment are (1) scrupulous cleanliness, (2) absolute order, (3) proper ventilation, and (4) efficient lighting. In mental hospitals these are hard to maintain, owing to the habits of the patients, and for this reason a special and almost ideal standard is insisted upon. When applied to the individual, hygiene indicates a very keen observation and a close supervision of all points affecting physical well-being. Special training is necessary with regard to this in dealing with mental cases. The patients, owing to their mental condition, may be like infants, unable to look after themselves, or, on the other hand, they may become intentionally neglectful, and may attempt deliberately to deceive the nurse. The nurse must, therefore, carefully “mother” her patients, and thus ensure, for example, that they are properly and neatly dressed, that their clothing is sufficient and in good order, that when out of doors they are prevented from standing about in cold weather, and that they are sheltered in hot weather from the heat of the sun.

One of the most important points in promoting the well-being of a patient is that of **sleep**. During sleep the nervous tissues have an opportunity of repairing the wear and tear of the working hours. A regular period of sleep during the twenty-four hours is necessary for the health of every individual, and is absolutely essential in the successful treatment of mental diseases. Wakefulness and restlessness at night must always be reported to the medical officer, and when present every means, such

as exercise, employment, open-air treatment, will be utilised, aided, if necessary, by the use of hypnotics.

The **general cleanliness** of each patient must be closely supervised. The nurse must remember that personal neglect is a very marked feature of mental disorders. The hair, scalp, nails, ears, and body generally must be frequently and regularly examined, and kept scrupulously clean.

With regard to the bathing of patients, special regulations are rigidly enforced. They are designed to prevent any danger of scalding, to avoid attempts at suicide, and to ensure that the patient be thoroughly cleansed. They are as follows :—

No patient shall be bathed except in the presence of an officer.

No patient shall be permitted to enter a bath before it is thoroughly prepared, and when the patient has entered the bath no additional water must be added.

In preparing a bath—

(a) The cold water must always be turned on first.

(b) The water having been well stirred, the temperature is to be taken, and must not be below 95° F., or above 98° F.

(c) The depth of the water must not exceed 7 inches.

When in the bath care must be taken—

(a) That each patient is thoroughly cleansed with soap.

(b) That a patient's head is not, under any pretence, put under the water.

After the bath the patients must be thoroughly dried and clothed as rapidly as possible.

*The bath key must never be left on the tap or within reach of any patient.*

The **mouth** should always be examined to ascertain the condition of gums and teeth. It is remarkable how septic and foul the gums may become if left unattended, and in many instances this poisonous condition is the cause of much general ill-health, anæmia, and lack of improvement. Decayed teeth may cause toothache and discomfort which, although not mentioned by the patient, produce wakefulness and general irritability. Owing to the same cause food may be refused or improperly masticated.

**Bladder and bowels.**—It is one of the important daily duties of a nurse to observe in the patients whether the functions of the bladder and the bowels are in healthy working order. In all those suffering

from insanity and other nervous affections there is a marked tendency for serious complications to develop with regard to these functions. As to the bladder, the most common complications are retention of urine and incontinence.

*Retention of urine* is most frequently due to paralysis of the bladder, or to the general senses being so dulled that the patient has no desire to pass water. The result of retention is distension, and if this is not relieved, most serious, if not fatal consequences may follow from rupture of the bladder.

*Incontinence* is mainly caused by distension, paralysis of the muscles which control the outlet of the bladder, irritability due to inflammation of the bladder; or it may be the result of faulty habits. There is a dangerous tendency to regard incontinence as always due to faulty habits. Let the nurse beware of falling into an error fraught with such serious consequences. Incontinence must be considered so important a symptom that the nurse should never rest satisfied until its true cause has been ascertained.

*Constipation.*—With regard to the bowels, constipation is the most frequent trouble. It is a lamentable fact that nine out of every ten patients admitted into asylums arrive in a state of marked constipation; and it forms a striking object lesson to observe the remarkable diminution in the restlessness, irritability, excitement, or depression which follows the removal from the bowels of the fœtid, poisonous contents. The tongue, the odour of the breath, and the general appearance are guides to the nurse as to the condition of the bowels, but if there is any doubt the abdomen should be examined with a view to the finding of distension or the presence of fæcal masses.

*Feeding.*—Success in dealing with any form of disease depends very largely upon maintaining the bodily strength by appropriate feeding. It is, therefore, very necessary for the nurse carefully to supervise the suitability of each patient's diet. In all mental hospitals there is a fixed scale of diet suitable for those who are able bodied, but this can be modified according to the requirements of each individual case. Much depends, however, upon the serving of the food, for it is that little additional and thoughtful attention to detail which makes a meal seem "nicely served" and appetising, instead of coarse and repugnant. The amount of food taken by each patient should be carefully noted, and any loss of appetite or refusal of food should be inquired into and

the cause ascertained. To those patients whose teeth are defective or absent a mince diet should be given. Some patients have a tendency to bolt their food, with consequent danger of choking. For these the food should be minced or finely chopped, and, if necessary, they must be hand-fed. Any patients who steal the food of those near them should be placed by themselves at separate tables. Those who refuse food owing to delusional ideas (poisoning, etc.) should not be unduly pampered, as this will only tend to preserve and further to increase their false belief. Refusal of food can frequently be dealt with by suasion, but on no account must the nurse attempt to force food into a patient's mouth. When persuasion fails, as a last resort the nasal tube will be employed, the so-called "forced feeding," but only by the medical officer.

*Nasal feeding.*—The tube should always be kept scrupulously clean, and some lubricant, such as olive oil, vaseline, or glycerine, kept at hand. Various forms of liquid food are thus administered—usually milk or milk and eggs—but most useful of all is milk with plasmon or some similar milk-proteid food. From personal experiment it is the writer's firm opinion that the quantity of fluid food given at any one time should never exceed  $1\frac{1}{2}$  pints, and in addition it is advisable that even this quantity should be partially if not completely peptonised.

A few hints are necessary with regard to the preparation of the food for nasal feeding. Care should be taken to ensure that the fluid be free from any solid lumps or milk scum, as these will block the tube and thereby cause delay and unnecessary annoyance to the patient. When plasmon and peptonised milk are to be used, prepare each separately and mix them thoroughly only at the time when the food is required. If they are mixed and left standing for any length of time a jelly-like, semi-solid mass may form, which is quite useless for the purpose of nasal feeding. Plasmon is most easily prepared with a little water, and afterwards dissolved in the milk.

*Rectal feeding* is not very frequently employed, and except that special care must be taken in resistive or paralysed cases to avoid injuring the parts with the nozzle of the syringe, further comment is unnecessary.

**Medicines.**—It should be an absolute rule that no medicine of any kind, and this includes aperients, should be given without the order of a medical officer. As in the case of food, but more especially with regard to medicines, delusional ideas are apt to be formed. In the case



of refusal, only persuasion, never force, must be employed. Moreover, patients should never be tricked or deceived by putting the medicine in tea or by mixing powders with butter and spreading this on the patient's bread. The discovery of such deception causes, not unnaturally, intense distrust, suspicion, and more firmly fixed delusional beliefs. Medicine is usually administered in liquid form, but whenever pills, tabloids, etc., are used, very great care must be taken to prevent the patient from concealing them in the mouth. A collection of such pills or tabloids might be used with suicidal intent. Certain forms of sedatives (sulphonal, bromides) render the patient particularly susceptible to chills and also to sunburn; precautions, therefore, must be taken in such cases.

**Bed-sore.**—In every mental hospital there is an accumulation of bed-ridden, infirm, helpless, and paralysed cases who, owing to their mental condition, are frequently grossly defective in their habits. The formation of bed-sores, therefore, can only be prevented by the most unremitting care and attention. In spite of all the difficulties, however, the nurse should consider that the occurrence of a bed-sore is a serious reflection upon his or her capacity. The patient should be kept absolutely clean and dry, and the position should be frequently changed, not only from the back to either side, but also on to the face with the head turned to one side—a quite comfortable position, as experience will prove. The ordinary routine hospital method of rubbing with methylated spirit and powdering with boracic is often quite insufficient. The most useful preparation in the writer's experience is a solution of tannic acid in proof spirit or absolute alcohol (3i to 3i). This solution hardens the skin, and has warded off bed-sore formation in desperate cases where prevention seemed altogether impossible. The solution should be lightly rubbed in with a pad of cotton-wool and allowed to dry. It is advisable for the nurse to protect her hands when using the solution. Too little attention is usually paid to the sheets and nightdresses, which in most institutions are *not* of the finest texture. When the patient is restless, or more particularly when he is heavy and is being turned over by the nurse, his body is rubbed against the sheet. Let the nurse try the effect of this by the experiment of rubbing the knuckles fairly firmly and rapidly along an ordinary sheet. Powdering the sheets thickly with starch or a mixture of starch and boracic entirely removes their "emery paper" qualities.

**Trophic sore.**—In certain forms of nervous disorder, particularly those affecting the spinal cord and the peripheral nerves, this complication is apt to arise. Large areas of the skin, deprived by disease of their trophic nerve influence, may die and slough away, leaving large, deep, unhealthy ulcers. Although most frequently occurring over the sacrum, hips, and other points where pressure is most common, these sloughs may appear in other positions, such as the front of the thigh, where pressure is usually absent. The condition may arise with startling rapidity. Within a brief period, the nurse may find that a large portion of skin has become discoloured and covered with blisters, an appearance which strongly suggests that the part has been burnt or scalded, and in spite of treatment a large slough forms. The *true* trophic sore cannot be prevented, but the nurse should always remember that in very enfeebled cases the pressure of a bed-pan or the too lightly protected hot bottle may cause a so-called “ trophic sore ” which really is not a trophic sore at all, but is one which should never have occurred.

**“ Insane ear.”**—This is a trophic condition which is of frequent occurrence among the insane, especially among the chronic types of insanity. It arises from degeneration of the capillary blood vessels supplying the capsule (perichondrium) of the cartilages of the ears. These vessels become so fragile that a slight blow or even the pressure due to laying the head upon the pillow is sufficient to rupture them. This results in bleeding between the capsule and the cartilage, and in severe cases the whole of the capsule is stripped from the cartilage. A large egg-shaped swelling of the ear is thus formed. The blood clot which forms this swelling is gradually absorbed, and as the cartilage cannot live with its capsule torn from it, it dies and is also absorbed, with the result that the ear becomes shrivelled and distorted.

**Temperature.**—It should be a strict rule that the clinical thermometer must never be placed in the mouth of a patient. Fatal results may follow the biting off and swallowing of a portion of the thermometer. The temperature should be taken in the axilla or groin, and except in a few cases the thermometer should be held continuously in position by the nurse. It will occasionally be found in cases of nervous disease that the temperature of one side of the body varies from that of the other. When such a condition is present the rectal temperature should, if possible, be taken.

**General diseases.**—In the insane the symptoms of general bodily



disease are frequently most markedly modified or almost completely masked. Pain and malaise may be entirely absent, or if present so concealed that there is no indication that the patient is suffering. For example: fracture of clavicle or ribs may produce no apparent discomfort, and for this reason may be entirely overlooked. Cancer in various regions may produce in the patient little obvious discomfort and no apparent alarm. As a guide, temperature may also fail in that in some of the most acute disorders, lobar pneumonia for example, it may be subnormal. In some cases of phthisis both cough and temperature are absent, although examination of the patient shows that the lungs are riddled with patches of tubercular mischief. The examples given will suffice to emphasise the necessity for the most careful and constant individual observation of every patient.

**Ulcerative colitis.**—Asylum dysentery is a disease very prevalent among the insane. It occurs mostly in the enfeebled cases, but may occasionally attack the healthy adult. The **symptoms** usually appear suddenly. There is sudden rise of temperature ( $102^{\circ}$ – $104^{\circ}$  F.), together with abdominal pain or discomfort, followed by severe diarrhoea, and in some cases there is distressing pain and constant straining at stool. Thirty to forty motions may be passed in the twenty-four hours. The motions are liquid and have a peculiarly acrid and foul odour. They contain shreds of blood-stained mucus, the presence of which is the typical symptom. The temperature falls rapidly, and after the third or fourth day is subnormal, and usually remains so. The diarrhoea is frequently very persistent, and produces great exhaustion. Recovery is often long delayed, relapses are of frequent occurrence, and the condition has a marked tendency to become chronic.

The **nursing** of colitis is practically the same as the nursing of enteric fever.\* Colitis is considered to be an infectious disease, and therefore the strictest precautions are necessary to prevent its further spread.

#### SURGICAL CONDITIONS

The nursing of surgical conditions is often a matter of great difficulty. Unless carefully prevented, certain patients will tear off dressings and splints, will interfere with and soil a wound, or wave a broken limb about. Moreover, patients who are depressed may attempt to strangle themselves with their bandages. It is a strict rule that a

patient wearing a bandage or surgical appliance must always be under the immediate observation of a nurse. To secure bandages safety-pins are not permissible; they must be fixed by stitching, and if a patient is inclined to tear off the bandages the amount of necessary stitching is increased. The majority of fractures are fixed in plaster-of-Paris splints, which must be carefully guarded until fully "set." Before fomentations are applied their heat must be carefully tested, as in many cases the senses of the patient are so dulled that a serious burn may result without causing any apparent discomfort.

**Midwifery.**—During pregnancy the patient should be under constant supervision, not only to prevent attempts at inducing abortion or premature labour, but in order that the possible occurrence of such or the normal onset of labour may be immediately noted. Labour, even in primipara, is usually easy, rapid, and free from complications. Many patients conceal the fact that labour has commenced and, as a warning example, it may be stated that it has actually happened that the first indication that labour was in progress has been the appearance of the patient running down the ward, the newly-born infant dragged after her by the umbilical cord, the placenta being still *in utero*! The mother is never permitted to suckle the infant, consequently the breasts require careful attention and the milk must be dispersed by the application of belladonna. Belladonna plasters should not be employed, as the patient may pull them off and eat them. Instead of plasters, glycerine and belladonna should be rubbed over the breasts and then firm bandages applied with plenty of absorbent wool padding. The mother may be allowed to see her child, and even hold it, but very great care must be taken lest she should impulsively injure it.

## CHAPTER XXXV

### MENTAL NURSING

#### II. PRACTICAL NURSING OF THE INSANE (*concluded*)

Idiocy and Imbecility—Epilepsy—Mania—Stupor—Melancholia—Recurrent Mania and Melancholia—Delusional Insanity—Dementia—General Paralysis—Private Nursing of the Insane.

THE foregoing nursing points may roughly be called *general* to all forms of insanity. Each special group, according to the classification (p. 36), will now be considered.

##### I. IDIOCY AND IMBECILITY

These conditions are the result of incomplete or arrested development. In idiots the development of the higher portions of brain being absent, or very slight, practically all higher mental action is absent. They are the lowest type of the human species, are unable to speak but may make inarticulate noises, are unable to attend to themselves or to their wants, and are grossly defective and degraded in their habits. Their existence is purely vegetative. The nurse should remember that they are specially liable to contract ordinary diseases, particularly consumption.

Imbecility as a symptom varies according to the point at which development has ceased. The lowest type of imbecile is but one degree removed from the idiot. The highest type has just failed to attain complete mental development. Almost all the lower grade imbeciles are under public or private control. The higher grades, being more able to fend for themselves, may manage to preserve their independence. It is, however, to this class of "defectives" that the majority of the world's wastrels, drunkards, criminals, gamblers and spendthrifts belong, and owing to their defect they are very liable to attacks of acute insanity if exposed to any form of stress. In imbeciles the mental powers are limited, self-control is lacking, and impulsiveness is a marked feature. They are consequently very prone to be sexually degraded and perverted. They are self-centred, selfish, and liable to outbursts of passion

if "crossed" in any way. If properly managed they are usually tractable, simple, and childish. As a class they should really be placed, not in mental hospitals but in institutions for defectives where special means of training and education are provided.

## II. EPILEPSY

Although epilepsy has been briefly treated elsewhere in this work, the important place it holds in asylum work requires that it should be entered into at some length in this chapter.

Epileptics may be divided into two groups, the sane and the insane. The former, however, must always be regarded as being unstable mentally and very liable to develop symptoms which will necessitate their being legally certified as insane. The most frequent predisposing cause of epilepsy is defective heredity, which includes alcoholism as well as insanity and epilepsy in the progenitors. With a basis of defective heredity any form of stress, such as teething, fright, overwork, or bodily illness, may become the *exciting* or immediate cause of epilepsy. In addition to this developmental group epilepsy may be produced by chronic alcoholism or drug taking—the so-called "acquired epilepsy." There is also a third group, termed "organic epilepsy," where, on account of organic disease of the brain, such as tumours, hæmorrhages, or owing to accidental injuries, epilepsy arises.

In the developmental group, to which the large majority of epileptics belong, the onset of convulsions usually appears before the twentieth year. The chief symptom of epilepsy is the convulsion or fit. This may be general and prolonged (*grand mal*), or very slight and producing only momentary unconsciousness (*petit mal*). There is also another form of epileptic explosion where the mental state alone is disturbed without any convulsion occurring (*epilepsy larvé*).

In **grand mal** the convulsion is not infrequently preceded by some sensory effect which is called an *aura*. There are innumerable varieties of the aura, such as the tingling of a finger, the sound of bells, flashes of light, or the appearance of some curious manikin or animal. An aura may be momentary, or it may last for a considerable time before the fit commences, and so act as a warning to the patient. After the aura the convulsion proceeds through the following stages:

*Unconsciousness*.—The patient becomes completely unconscious, and



if standing will fall, very frequently giving vent to a peculiarly harsh scream or cry, which is recognised as the "epileptic cry."

*The tonic stage.*—This usually begins with a localised contraction of certain muscles of the face or extremities, which rapidly extends over the whole body. For example, the right thumb may be first strongly flexed, rapidly followed by the right forearm, upper arm, right side of face, right leg, and then by the left side of the body. All the muscles become tense and rigid. The stage lasts for a period varying from a few seconds up to a minute and a half. The muscular strain is so great that the face becomes turgid, and as no respiration can take place marked cyanosis appears.

The tonic stage usually passes off in the same order as it commenced, and is followed by the *clonic stage*. During this stage there is violent flexion and extension of the limbs, the facial muscles twitch violently, the tongue is rapidly protruded and withdrawn, the mouth is forcibly opened and closed, the respirations are spasmodic, noisy, and stertorous. This stage may last from two to ten minutes, and during its progress the tongue may be bitten and the contents of bladder and bowel involuntarily evacuated. The movements gradually become less violent, and finally cease.

The stage following their cessation is called the *post-epileptic state*. The patient remains unconscious for a period varying from a few minutes up to several hours. There is usually considerable confusion, of varying degree and duration, and whilst in this semi-conscious state the patient may become stuporose, resistive, emotional, destructive, restless, indecent, intensely quarrelsome, violent, and even homicidal. More frequently, however, after a few hours' sleep, the patient awakes in his usual state.

The condition known as *status epilepticus* is one in which the patient has a succession of fits, from ten to several hundred, without regaining consciousness.

**Petit mal.**—Consciousness in this form of epileptic seizure is only lost for a very short time, and the convulsive movements are so very slight as frequently to escape observation. So short may the period of unconsciousness be that the patient may be unaware of its occurrence and may resume the thread of a conversation interrupted by the seizure, a momentary appearance of confusion and hesitation only being observable. These attacks are usually and lightly termed "sensations" by

the patient, but they may be followed by a post-epileptic state similar to that of *grand mal*.

**Epilepsy larvé or psychic epilepsy.**—In this condition there are no convulsions, but consciousness is very gravely affected. The patient may become stuporose and resistive, or intensely excited and violent. All kinds of criminal and indecent acts may be committed of which the patient has no subsequent recollection, or has only a very hazy and confused idea as to what has happened. A good example came under the care of the writer. The patient, a quiet, decent, and orderly man, found himself locked up in a police station. He could not recollect at all how he had got there, his last recollection being that he was shaving himself at home. What actually occurred was that whilst shaving himself he suddenly attacked his wife, pursued her up the street clad in his night attire and grasping the razor, had a violent struggle with the police, and was with the greatest difficulty controlled and taken to the police-station.

**Jacksonian epilepsy.**—In some cases of organic brain disease or of brain injury a peculiar form of fit occurs. In these cases of Jacksonian epilepsy the onset of the fit is usually very slow, and consists of twitching movements of a limb or portion of a limb, or of a group of facial muscles, with a varying degree of loss of consciousness. In most cases no general convulsion occurs, but in some cases the twitching movements gradually extend until there is a general seizure. The extension, however, is very gradual, except in some cases of old standing, when it is almost as rapid as in the case of *grand mal*. The chief point in these cases is to observe in what group of muscles the twitching movements commence, for with this knowledge the exact area of the disease or of the injury of the brain can be localised and surgical measures adopted. There is usually found to be some permanent weakness or paralysis of the affected limb or group of muscles.

**Effects of Epilepsy.**—In all cases of epilepsy progressive mental deterioration occurs, chiefly affecting the memory. Ideation becomes increasingly limited, reason impaired, and judgment faulty. The majority of insane epileptics show a varying degree of imbecility. Epileptics as a class are markedly irritable and explosive, are highly religious, and at the same time much given to lying. They tend to combine and to support each other in making exaggerated and untruthful reports about the nurses, the food, or the conduct of other patients,



and will dramatically invoke the Almighty as a witness to their veracity. They are morbidly introspective and hypochondriacal. Their sexual control is usually deficient, so that masturbation is common. Their irritability and tendency to turbulence show marked periodicity. Gradually increasing explosiveness usually terminates in a fit or a series of fits, or may be converted into an "equivalent" attack of intense epileptic excitement—the so-called "furor."

**Nursing points.**—The nursing of the epileptic calls for exceptional patience, firmness, and tact. A very strict, yet kindly discipline must be maintained, and the patients should always be under constant observation both day and night.

With regard to injuries from falling when in a fit, quickness in observation and intelligent anticipation on the part of the nurse will often avoid many a severe bruise or other injury. An epileptic should never be allowed to climb upon a chair or to use a ladder, must never be left near an unguarded fire or stove, nor be permitted to carry hot water. To avoid falls when a fit occurs while the patient is in bed it is advisable for the bedstead to be of the specially low epileptic pattern. At meal times special care should be taken to prevent the patient filling the mouth too full or with too large lumps of food. If on a public road the nurse should stand between the patient and the traffic. When a fit occurs the nurse should rush to the patient to prevent the fall, if possible. A pillow should be placed under the head, the clothing around the neck and chest loosened, and the violent movements of the limbs *guided*, not forcibly restrained, in order to prevent injury.

Intelligent observation should be exercised as to the character of the fit: in what part it commenced, its progress, severity, duration, and the hour of commencement. No attempt should be made to prevent the tongue being bitten, as such mistaken efforts frequently result in much bruising of the lips and gums, and in the breaking of teeth. After the fit, allow the patient to lie quietly on a couch, being specially observant lest dangerous post-epileptic symptoms should arise, and taking care to change the clothing if wet or soiled. If a patient is unconscious for any length of time after a fit, the bladder should always be examined for distension, this condition being specially prone to occur during the *status epilepticus*.

With regard to the *general health* the nurse should be particularly watchful against constipation. It is almost inexcusable for a nurse to

allow a patient suffering from any form of insanity, but more especially from epilepsy, to become constipated. The renal secretion should also be kept active by the allowance of a plentiful supply of water. The meals should be regular, the quantity of meat limited, tea or coffee taken sparingly, and alcohol *absolutely forbidden*. Manual employment is the most valuable aid in the reduction of irritability and explosiveness. Every epileptic benefits from manual labour, and therefore the nurse should be incessant in persuading patients to employ themselves usefully. Watchfulness should be exercised to discover mischievous combinations, for a serious insurrection amongst epileptics is not an unknown occurrence.

In the treatment of epilepsy the bromides are frequently employed, and the nurse should remember that they render the patient peculiarly susceptible to cold, bronchitis, and pneumonia. The clothing of such patients should therefore be plentiful, and constant care should be taken to avoid chills, especially after the occurrence of fits.

After every fit the patient should be carefully examined for possible injuries.

### III. MANIA

The severity of this condition varies from mild, general excitability and restlessness to the wildest delirium. In the milder forms (hypomania) consciousness and memory are but little affected, perception and ideation being increased in their activity. The reasoning power is impaired and becomes superficial, judgment being hasty and incomplete. The patient is talkative, boastful, interfering, and irrepressible, as a rule happy and not infrequently exuberantly mischievous. There is marked irritability, together with intolerance of any direction or restraining influence. Restlessness is pronounced, and in both thought and action there is a marked lack of continuity.

In the severer forms both consciousness and memory are impaired, perception is exceedingly acute, and ideation intensely active. Rapid flights of ideas result from the perception of any object or sound, and these are constantly being cut short and replaced by new flights of ideas arising from the perception of other objects, the change taking place with extraordinary rapidity. The attention can only be momentarily fixed on any one subject, and in consequence the conversation is utterly confused and inconsequent. The connecting links in the association of ideas are too rapid to be spoken and so grotesque that it is impossible to

grasp them, with the result that we are inclined to doubt their existence and to term the patient's conversation *incoherent*. For example, take the sentence, "Brush, carriage, ghost." There seems to be no link between the words at all. Now read the following: "*Brush*, broom, brougham, *carriage*, trap, gin, spirit, *ghost*," and a grotesque connection is seen to exist. As with words, so with ideas. Illusions, hallucinations and delusions may be present, and if so are usually markedly ephemeral in character. The patient is, as a rule, exuberantly happy and exalted, is effusively friendly at one moment but irritable, antagonistic, and quarrelsome the next. Intense restlessness is shown in rapidly changing varieties—grimacing, shouting, turning somersaults, writing, and so forth, and there are also marked destructiveness and mischievous tendencies. The habits are usually degraded, masturbation being shamelessly practised, the drinking of urine, and the smearing of the body and surroundings with *fæces* being a common feature.

The general bodily condition is strikingly affected. The patient presents a hectic, feverish appearance, the temperature is frequently raised, the breath offensive, the teeth covered with *sordes*, the tongue dry, cracked, and brown in colour, the skin dry and hot, and the sweat offensive.

**Nursing points.**—The nursing of mania is trying, and presents special difficulties. In the acute stages of delirium the food should be in liquid form and peptonised. Care must be taken to insure that a sufficient quantity be taken, and if the patient is too excited to be fed by hand, nasal feeding will be ordered. When the excitement has sufficiently resolved to permit of solid food being given it should be at first in the form of mince and sop. The patient should be prevented from bolting food wholesale or from secreting it in bedding, clothing, or elsewhere with the intention of deceiving the nurse. Water between meals should be given, whether the patient asks for it or not; the necessity for this is frequently overlooked or ignored by the nurse. The condition of the bladder and bowels must be most carefully attended to. The mouth and gums should be kept, as far as is possible, clean and free from *sordes* by frequent swabbing. A 1 in 60 solution of liquor sodæ chlorinatæ is perhaps the most efficacious lotion for this purpose.

The wet pack, hot or cold, or prolonged hot baths may be ordered, but these are always employed under close medical supervision and direction. Any tendency to collapse should be carefully watched for and

the pulse frequently examined whilst the patient is in the pack. The packs must be specially applied, as otherwise they constitute legal restraint. To avoid this the trunk and each limb should be *separately* swathed in a wet sheet and covered by a blanket ; two or more blankets being placed loosely round the patient after this has been accomplished.

In the case of fractures or serious wounds the patient may have to be placed under restraint in order to maintain the dressings or splints in position. In minor injuries, sores, and so forth, frequent antiseptic bathing and the application of ointments or collodion can be employed.

*Sleep*.—"Nature's soft nurse" must in this, as in every form of insanity, be encouraged. The best soporific of all is fresh air. It is remarkable how rapidly restlessness and excitement diminish under open-air treatment. The physical condition of the majority of acute cases requires rest in bed, if possible out of doors ; but in cases where the excitement is too intense to permit of this, isolation in a "single room" may be ordered, so that the patient may be freed from external causes of irritation and excitement. In exceptional cases seclusion may be ordered by the medical officer. If very destructive of clothing and bedding the patient may be placed in ticken combinations lined with swansdown and given ticken bed-rugs. The combinations are made with loop holes down the back, and must be tied on with small pieces of string or boot-lace, not laced up with a long string. There is a tendency for the combinations to chafe the skin in the region of the gluteal fold, especially if absolute dryness and cleanliness is not insisted upon.

Exercise graduated according to the patient's physical condition is best found in various forms of useful employment.

#### IV. STUPOR

Stupor is conveniently described under two headings, (1) *resistive*, (2) *anergic* or non-resistive. In both groups consciousness and perception are usually but little disturbed and both ideation and reasoning fairly active, the outstanding feature being a difficulty in directing the "pressure" (will) along any definite line of action. In other words, volition is either to a varying degree impeded or completely blocked.

The condition of stupor occupies an intermediate position between mania and melancholia, not infrequently being a transition stage from the one to the other.

**Resistive stupor**.—In this condition, as soon as any impulse to act



arises, an absolutely opposite and counter impulse also arises. The result of this is a condition of rigidity and tension, the amount of tension varying with the intensity of the counter impulse. This tension is expressed by two symptoms, termed negativism and automatism. *Negativism* is shown when the patient absolutely refuses to speak, strenuously resists all movements, such as dressing and undressing, walking, and feeding. It may be so marked that the contents of the bladder and rectum are retained, necessitating enemata and catheterisation. The patient sits in a rigid, fixed attitude, hands usually tightly clenched, eyes closed, mouth pursed up and head thrown back, or he may, on the other hand, roll himself up into a kind of rigid ball with legs drawn up on the abdomen, arms folded, and head bent between the knees. *Automatism* is found in the less severe form of resistive stupor. The tension results in jerky, stiff automatic action like that of a "wax-work"; the tone of voice is monotonous, speech scanning or staccato and not infrequently limited to a reiteration of the same word or sentence. Peculiar attitudes may be assumed, and peculiar automatic movements constantly made, such as the touching of some particular spot or piece of furniture.

**Anergic stupor.**—In this state the patient takes no apparent interest in the surroundings. The expression is relaxed, dull, and vacant, and all movements are slow and slovenly. The patient sits limply about or lies passive and motionless in bed, will not trouble to take food, and in habits is defective. The circulation is very poor, the extremities being cyanosed and cold.

In both resistive and anergic stupor the condition of *catalepsy* may arise, and when present every kind of fantastic and uncomfortable position into which the body and limbs are placed will be maintained for a period which will vary with the severity of the cataleptic state. Again in both forms of stupor there occasionally may be *sudden remissions*. The patient may suddenly become quite rational for a few hours or days, and when questioned closely will accurately and in detail relate events of which in the stuporose condition no apparent notice had been taken. A more serious form of remission is where the patient suddenly and for a short period becomes very excited, maniacal, impulsively violent and unmanageable. Sudden desperate homicidal or suicidal attempts may be made without previous warning.

**Nursing points.**—The nursing of stupor calls for almost limitless



patience and self-control ; especially is this so in dealing with the resistive form. For example, in dressing the patient the clothes are torn off as soon as put on, and in undressing are put on as soon as taken off. Again, when placed on the commode the contents of the bowels and bladder are retained, but are immediately voided when the patient gets into bed. Great care must be paid in all cases of stupor to ensure that a sufficient quantity of food is taken, and also that the clothing is adequate, and that the patient is not allowed to sit about exposed either to the heat of the sun or to inclement weather, pneumonia and bronchitis being easily contracted owing to the defective state of the circulation. Constant observation is an absolute necessity, and a false sense of security should be guarded against, as otherwise a serious assault, suicide, or other calamity may result. Pressure sores must be avoided by placing lint between the skin surfaces of tightly-clenched fingers and limbs, and particular attention directed to the prevention of bed-sores and to the condition of both bladder and bowels.

#### V. MELANCHOLIA

Except in the more severe form, consciousness is not usually much disturbed, and perception is little affected. Ideation, however, is usually markedly limited and reasoning so impaired that judgments, if arrived at at all, are formed only with great difficulty, and after much hesitation and delay. In the milder stages the patient feels unwell, despondent, and is imbued with a sense of fear and apprehension. The thoughts become confused, the memory becomes increasingly faulty, and he is worried because he is unable to deal promptly and decisively with everyday matters. A constant feature is the presence of insomnia : for weeks the patient has scarcely more than a few hours' restless slumber. The ordinary work seems to become increasingly difficult, and his power of concentration and application diminishes. The depression increases, and he becomes self-absorbed, dull, confused, restless, and utterly miserable.

As the symptoms advance a great variety of hypochondriacal notions may arise, such as that the bowels are stopped up, that cancer is developing internally, that the heart is diseased, that vermin infest the skin, that the body is being eaten away by worms, that the brain is putrid, and that foul and poisonous stench arises from the body. Self-accusation is a common feature, the despondency being attributed to all kinds

of causes, such as the petty sins of childhood, sexual indiscretions in youth, or lack of proper attention whilst in church. Again, other patients believe that Satan has them in his power, that God has cursed them, that they are doomed to die a horrible death, that they have committed murder or other crimes, and that others have been punished for their misdeeds. Hallucinations, most frequently of hearing, are common. Voices curse them, evil spirits may urge them to sin, they hear the screams of their children who are being tortured, they are surrounded by flames, faces grimace at them, their food stinks or tastes of poison. Oppressed by the weight of their sorrow, they become self-centred, indifferent to their surroundings, unable to apply themselves to anything; and their whole attitude and facial expression is one of intense misery and anxiety. Emotional outbursts may arise suddenly, when they pray aloud, weep copiously, and declaim against their miserable lot. In some cases this agitation is so severe and prolonged that for days their condition is one of frenzy. Day and night they are constantly weeping, shouting, and screaming, rushing wildly about, tearing their hair, striking themselves, scraping themselves with their nails, and throwing themselves on the ground till they are utterly worn out and exhausted.

In all forms of melancholia there is a marked tendency to commit suicide. The impulse may be sudden, or may become a prolonged determination to effect self-destruction. The most frequent methods of attempting suicide are by hanging, strangulation, cutting, poisoning, and drowning. Other attempts may be made by swallowing stones, pins, glass, or nails; by choking, various articles being forced into the throat, by precipitation down flights of steps, or by starvation. In addition to the impulse to commit suicide there may arise impulses to self-mutilation. Under the influence of hallucinations and delusions the patient may make sudden impulsive or constant and determined attempts to injure some portion of the body. For example: under a belief that the voice of God commands that an eye shall be plucked out because it has offended, forthwith attempts may be made to gouge out the offending member. Again, owing to a delusional belief that Salvation will be withheld until the tongue that has spoken blasphemously is plucked out, attempts may be made to tear it from its roots.

With regard to the *physical condition* in melancholia, the activity of the body and of all its organs is depressed. Anæmia is a frequent feature, dyspepsia and constipation commonly present. The tongue is coated,

the breath offensive, the skin unhealthy, and there is a liability to develop pustular eruptions and boils. A progressive loss of body weight is usually present.

**Nursing points.**—The nursing of melancholia entails the most rigid observation and intelligent watchfulness to prevent suicide or self-mutilation. In the acuter stages these dangers are so obvious that they can be recognised by anyone of ordinary intelligence. In dealing with suicidal melancholia the nurse should always remember that the whole effort and desire of the patient are focused upon self-destruction. The least relaxation of diligent and constant observation may spell disaster. As an example of this, a patient who was under the care of the writer may be quoted. A member of the nursing profession, obsessed with the idea that she was hopelessly under the influence of a witch, within the space of a few moments tore her hair out by the roots, and with this formed a stout rope and attempted to strangle herself. The same patient a few days later concealed in her mouth a thin shred of broken glass, sufficient, by means of her trained anatomical knowledge, to effect the laceration of a main artery. It is only due to the brilliant observation of an experienced Sister that this patient is now living, and having completely recovered is again able to do useful work in the world. In this case the attempt at strangulation was frustrated by close observation, and the intention of sawing through a main blood vessel foiled by the Sister, who noticed a slight yet unusual appearance in the mouth of the patient, and would not rest satisfied that all was well until she had made a thorough examination. A more fitting example of acute observation, combined with that "sense of danger" so essential to all nurses dealing with insanity, could not be cited.

Not infrequently patients intent upon suicide assume a false cheerfulness in order to disarm suspicion and to put the nurses off their guard. They do everything in their power to ingratiate themselves with the nurses, hoping to deceive them, and yet they are always keenly alert to seize the first opportunity of escaping from immediate observation for the few moments in which they hope to effect their purpose.

Sudden impulses to commit suicide may arise in patients who appear to be well on their way towards complete recovery. Anything unusual about any case of melancholia should at once arouse suspicion, and by frequent inquiry into the mental condition impulsive attempts may be anticipated. In most hospitals and asylums patients who are suicidal

are called "special cases." The particular attention of every nurse is directed to each "special case," and rigid rules are made to the effect that not for one moment is the patient to be allowed out of the sight and free from the close supervision of the nurse. Any failure in this respect is necessarily regarded as a most serious breach of duty. In cases where self-mutilation is attempted nurses may be specially appointed to be always with the patient and various forms of legal restraint may be ordered. In conditions of frenzy, seclusion under constant observation may be employed.

Rest in bed, especially in the open air, judicious feeding, general tonic treatment, and the relief of insomnia are the main features of treatment. Particular attention must be directed to ensure that sufficient food be taken, and every device to render the food appetising employed. Fussiness and unnecessary interference, which tend to increase insomnia, should be avoided. Under medical orders hot baths or the wet pack, followed by a light, nourishing meal, and in old people by a little alcohol at bedtime, may be tried to induce sleep, also gentle massage or warm sponging of the extremities. The effect of any hypnotic drug given must be carefully noted, and the period and character of the sleep obtained reported.

#### VI. RECURRENT MANIA AND MELANCHOLIA

Of this form of mental disease the chief feature is its recurrent character. Repeated attacks of varying severity of either mania or melancholia occur, each attack being separated by a period of apparently complete convalescence—the so-called *lucid interval*. This lucid interval may vary from a few days to several years. In the majority of cases, if the first attack is one of mania the succeeding attacks are also maniacal, and if the first attack is one of melancholia the following attacks are melancholia. There is a tendency to alternation of the two forms, the so-called "alternating or circular insanity." As the disease progresses the lucid interval becomes shorter; it is sometimes replaced by a period of stupor, or may disappear altogether, the depressed patient becoming more or less suddenly maniacal or *vice versa*.

**Nursing points.**—The nursing of this disease is that of mania, stupor or melancholia as each appears, care being exercised to detect any mental change from day to day, especially that from mania to melancholia, on account of the possibility of suicidal impulses.



## VII. DELUSIONAL INSANITY

This form of insanity may be conveniently divided into two groups—one in which the delusions are *progressive*, the other in which the delusions are *fixed* and do not materially alter. In both groups Consciousness is usually unaltered, Perception unusually keen, Ideation active, Memory extraordinarily good, especially for trivial events. Reasoning is very active, but is perverted, with the result that judgments which are readily formed are faulty.

**Progressive delusional insanity.**—In this group, to which the term **paranoia** has been given, the progress of the disease is usually very gradual. The disposition of the patient gradually alters, irritability and unusual suspiciousness are observed, all manner of trifling incidents are increasingly distorted and magnified into proofs that friends have become enemies and are plotting to achieve his ruin; paragraphs in the papers have a special significance, and chance remarks overheard are proof positive that he is the victim of systematic persecution. He leaves his work, deserts his home and friends, travels long distances to avoid pursuit, changing and doubling on the journey the more surely to elude his pursuers. Any temporary malaise becomes a certain indication that his food has been poisoned. Hallucinations, especially of hearing, develop. He hears people plotting against him, people in the street scoff at and threaten him, and poisonous gases whistle through holes in the walls of his room. During this stage of the disease the patient is usually somewhat depressed, anxious, and apprehensive. He begins to argue out with himself the reason why he is the victim of such unrelenting persecution, and gradually develops delusions such as that he is entitled to great wealth, large estates, and exalted titles. The depression disappears, and he becomes haughty and defiant in his general attitude. But as the persecution continues his delusions become even more expansive; he is the King, the Emperor of the World, and finally, mere earthly titles proving insufficient, he comes to believe that he is the Messiah or even the Almighty Himself, and that his persecutors are the emissaries of Satan.

**Fixed delusional insanity.**—In the second group the delusions do not progress, but remain practically fixed and unvaried. The scheme of the delusions is well systematised and of varying complexity in different cases, usually in proportion to the education of the patient. A good



example is the case of a patient, who believes that by Act of Parliament his schoolmaster was empowered to mesmerise him and remove from him all further power to resist the influence of those around him. Everyone can "will" him to think and to act, and he cannot offer any resistance. Any thoughts that arise in him are the result of this mesmeric influence, and he feels that he is under control in all that he says and does. He protests mildly against his fate and offers to write an autobiography, any profits from the sale of which will be devoted to the relief of similar sufferers. Another example of a fixed delusional state is that of a patient who declares that his body is being made the subject of experiments by a band of scientists. An extraordinary instrument, which he calls a "thoughtscope," reveals all his innermost thoughts and writes them in a book. The experimenters live miles away, but their wonderful machine keeps them constantly posted as to the action of every organ and fibre of the patient's body. Drugs are given to him and their effect noted, portions of the brain removed and the results recorded.

In both groups lucid intervals of varying duration are not uncommon. The delusions are then laughed at, and the patient appears to be convalescent, but close examination reveals the fact that there is always present a half-belief that the delusions are realities.

Under the fixed belief that they are instruments of the Almighty, or convinced that some one person is the instigator of the whole persecutory plot, murderous assaults may be committed. It is usually the paranoiac who attempts to shoot monarchs, prominent politicians, and eminent personages.

**Nursing points.**—The nature of the delusions must be carefully noted and their alteration and further development are to be looked for. The possibility of sudden homicidal outbursts must never be forgotten, and with regard to this the keenest vigilance should be exercised, as these patients are unusually crafty and are always plotting to obtain weapons with which to carry out their plans. Old bits of metal, nails, etc., are ingeniously concealed about the body and elsewhere, the mouth and rectum being not infrequently used as hiding places. Some of these patients are always plotting to overthrow authority and to create unrest and disorder, and may even instigate other patients to commit acts of violence. It is only by having a very thorough knowledge of the mental state that the escape of the patient, acts of violence, and combined plots

can be anticipated and prevented. No special course of medical treatment can be recommended. Causes of irritation should, as far as possible, be removed, and a healthy daily routine insisted upon. Titles assumed by the patient should never be employed when addressing him, nor should they be made a pretext for mockery and amusement, and no fantastic method of dressing should be allowed.

#### VIII. DEMENTIA

This form of mental disorder may be conveniently divided into two groups: (1) temporary dementia, (2) permanent dementia.

**Temporary dementia.**—This group includes patients who are recovering from protracted and severe illnesses, those who are exhausted by prolonged and excessive mental or physical exertion or fright and shock, those who are suffering from excessive indulgence in alcohol and hypnotics, and those who are convalescing from acute mental attacks. As previously remarked, it is astonishing that so little attention is paid to the effect of general diseases upon the mental state. All the acute fevers and septic conditions, especially those in which a prolonged high temperature occurs, produce a condition of mild or even moderately severe dementia. The patient in this state has lost some of his control, and becomes emotional and irritable. His memory is not so good; there is a facility and lack of mental grip and alertness, sustained attention to any subject is found to be difficult, there is a feeling of dulness and confusion, and any mental work readily produces fatigue. Unwonted carelessness and slovenliness in dress and personal appearance is not unusual, and a tendency to self-indulgence and to lack of moral control may be present. It may last for several months, or even years.

The severer forms of dementia of the temporary or recoverable variety result from acute mental attacks, and are also produced by alcoholic or drug excess. The patient is very confused, dull, and lacking in energy, all mental action is sluggish, his memory is very defective, and he cannot say where he is or give the date correctly. If he is able to give any account of himself at all it is usually confused and incorrect. He wanders aimlessly about or sits gazing dully before him, taking no interest in anything. He is slovenly, and his habits may be defective. As convalescence advances, this mental paralysis diminishes and considerable fretfulness and impulsiveness may develop, the alcoholic

and drug cases being specially inclined to be fractious and prone to outbursts of childish rage.

Complete recovery may take several years; indeed, it is questionable whether any patient who has had a severe mental attack ever completely regains his former intellectual standard. There nearly always seems to be a little permanent blunting of the edge of all his mental faculties.

**Permanent dementia.**—A patient, owing to an acute mental illness, may become to a varying degree permanently demented and, if his health is maintained, his condition will show little alteration, except with the advance of old age.

In senile dementia the earlier stages are like the milder form of temporary dementia already described, with this addition, that owing to weakening of the powers of criticism new ideas and methods are rejected as fads and a faith in old methods is dogmatically and petulantly reiterated. As the condition advances the memory becomes increasingly defective, especially for recent events. It is, however, remarkable how minutely accurate is the memory of these cases for trivial events of early life and childhood's days. Selfishness increases, and patients show increasing apathy, indifference, and lack of consideration towards those dearest to them. Childish irritability and petulance are marked, and in some cases sexual desire is so excited that they become lewd and obscene in conduct. Restlessness and insomnia at night time is a prominent feature which in some cases amounts almost to delirium. Not infrequently these cases show temporary melancholic phases, with delusions and hallucinations of a persecutory character. In the final stages the existence of these patients is purely "vegetative." Helpless, bedridden, and practically unconscious, their feeble flame of life gradually dims and flickers out.

**Organic dementia.**—This form of dementia is caused by all kinds of head injuries, such as severe concussion and fractures of the skull, also by tumours of or pressing on the brain, by apoplexy, cerebral embolism or thrombosis. The severity of the dementia is usually in direct relation to the extent of the disease or severity of the injury. The most marked feature is the great irritability and lack of control, especially in those cases caused by head injury. In some cases of cerebral tumours there is remarkable drowsiness. Transitory excitement and temporary states of depression may arise, accompanied by hallucinations and delusions.

The physical condition varies greatly, according to the extent and position in the brain of the injury or disease. Paralysis of various limbs or groups of muscles and destruction of the different senses indicate the portion of the brain affected.

**Nursing points.**—The whole endeavour of the nurse should be directed towards the training and, if possible, the re-education of the patient. The attempts to arouse and interest them should be unremitting and as varied as possible. Every variety of games, music, entertainments, dances, and other amusements should be encouraged, and varied forms of employment undertaken such as are suitable to the patient's physical state. It is only by thus arousing mental activity and directing it along proper lines of discipline and order that convalescence can be established and progressive mental deterioration checked. In convalescing cases any tendency to relapse must be carefully watched for, as this frequently occurs. Lacking self-confidence, the convalescing, melancholic patient may become anxious and worried at the prospect of being discharged to the outside world, and not infrequently impulsive attempts at suicide have been made. An abundance of sleep is essential, and plenty of healthy, open-air exercise and nourishing food provided. Tonics of various kinds will be ordered to counteract the anæmia and general physical sluggishness. Special attention should be paid to the avoidance of masturbation and constipation. The more advanced enfeebled and paralysed cases must be carefully "mothered." The diet must be judiciously supervised, sop and liquid diet being given to patients who cannot masticate properly, and to those in whom there is a liability to choking. Chills and colds must be avoided by proper attention to the clothing, by seeing that those patients who cannot dress themselves properly are suitably clad, and by preventing exposure to inclement weather. The senile patients are particularly liable to contract bronchitis and pneumonia. Nocturnal restlessness may be relieved by giving a little light food, such as a glass of hot milk or a little hot spirits and water at bedtime. As the bones of the aged are brittle, every care must be taken to avoid fractures, and after any fall, however slight, most careful examination must be made for possible injuries. Ribs are frequently broken by apparently slight blows or falls, and also may be broken by the nurse when lifting or raising the patient in bed. Care should, therefore, be taken when lifting in the arms not to squeeze the patient, and to keep the hands *flat*, so as not to dig the points of the



fingers into the patient. Care with regard to this will also prevent much of the minor bruising which so readily appears in the enfeebled. Pressure sores and bed-sores are very liable to develop, especially in the paralysed, so that the nurse must be unremitting in her efforts to avoid these calamities.

#### IX. GENERAL PARALYSIS

This is a progressive disease of the brain which usually runs its course and ends fatally in from one to three years. It is a disease of middle life, the age of the majority of the patients ranging between thirty-five and fifty years. Men are much more liable to be attacked than women, about five to one being the proportion. The changes in the brain consist in a general progressive wasting, with destruction of the grey matter, more particularly affecting the frontal and parietal regions. Throughout the course of the disease both the mental and physical symptoms keep in fairly constant relation to the advance in the wasting of the brain. Although the character and course of the physical symptoms is in all cases fairly constant, there is very considerable variety in the mental symptoms, which may be conveniently grouped into four principal types: (1) the expansive, exalted; (2) the demented; (3) the depressed; (4) the maniacal. Although the expansive, exalted type is commonly regarded as the classical and the most frequent form of the disease, it is questionable whether the demented is not at the present time the more prevalent type.

The course of the disease in all types may be divided into three stages—the stage of onset, the stage of acute symptoms with seizures and congestive attacks, the final stage of paralysis. There is no sharp line of division between these stages, which vary greatly in duration and gradually merge one into the other. From beginning to end the most characteristic symptom of the disease in all types is the progressive dementia.

**The expansive, exalted type.**—The stage of onset in this form is usually very gradual. The patient shows increasing mental activity and self-confidence. Control, however, becomes weakened, with the result that restlessness, irritability, and difficulty in concentration and application develop. The moral tone becomes impaired, so that excessive alcoholic and sexual indulgences are of frequent occurrence. A general sense of well-being is an increasingly marked feature, and as the disease advances the patients fitfully apply themselves with energy to all kinds of money-making and philanthropic schemes, which at first



may seem fairly reasonable in scope, but which gradually become utterly childish, ridiculous, and fantastic. All forms of expansive delusions develop. The patient declares that he is the strongest man on earth, the best runner, the finest shot, and possesses the most wonderful voice, is the King of kings, and owns millions of tons of jewels, thousands of horses, vast properties, and palaces built entirely of gold. The patients claim that in all their attributes and in all their actions they are superlatively superior to everybody. They are contented, happy, pleased with everything, boastful, very irritable and interfering, and tend, if crossed in any way, to become impulsively violent. Throughout the disease they become increasingly facile and demented, and as dementia advances the range of mental activity diminishes. Memory becomes increasingly deficient and ideation progressively weakened, so that the flights of fancy become more and more limited. The patients become progressively more dull, apathetic, lost to their surroundings, utterly careless of themselves and defective in their habits, until finally practically all mental activity ceases, so that while their life lasts their condition is purely vegetative.

**The demented type.**—In this form the symptoms of the disease are those of progressive dementia. The mental deterioration is unaccompanied by delusions or emotional excitement. In some cases the onset is so gradual that its existence is not suspected until a seizure calls attention to the condition.

**The depressed type.**—In this group the patients present in varying degrees of severity the symptoms of melancholia. The delusions are frequently of the hypochondriacal variety associated with self-accusation and persecutory ideas. There may arise sudden states of extreme anxiety and agitation. Suicide may be attempted, but this is unusual. As in the expansive type, dementia gradually advances, blotting out all intellectual activity.

**The maniacal type.**—In this form of the disease the stage of onset is brief, the patient rapidly becoming elated, extremely restless, noisy, and garrulous. Delusions rapidly develop, and are of the superlatively expansive variety. In severe cases the condition is that of acute delirium, in which, day and night, the patient never ceases to rush about and gabble incoherently until utterly exhausted. The course of this form of the disease is rapid and death may take place within a few weeks from exhaustion.

**Physical symptoms.**—In the initial stages of the disease a variety of minor nervous symptoms may arise, such as headache, slight dizziness, indefinite pains and sensations, which are frequently mistaken as being the result of hypochondriasis or neurasthenia. As the disease progresses, an increasing lack of muscular tone appears, together with fine, fibrillary tremor, especially of the muscles of the face and tongue. The *expression lines* become “ironed out,” with the result that the face of the patient lacks character and becomes dull and vacant, the muscular tremor being most noticeable when the patient protrudes the tongue or attempts to speak. The *speech* is markedly affected, becomes increasingly slurred, slovenly, slow, and monotonous. Some patients lose the power of speech altogether, and can only make unintelligible noises. The muscular tremor is well shown in the handwriting, which becomes very tremulous and straggling. The *gait* and general movements become increasingly clumsy, ataxic, and enfeebled, until the patient is unable to walk and is entirely dependent upon others.

The *nutrition* of the body is profoundly affected. During the stages of onset and of acute symptoms there is usually considerable loss of body weight, and not infrequently this is followed by an equally pronounced general physical improvement, the patient becoming fat and apparently in excellent health. With the advance of the disease general wasting again ensues until, if the third stage is at all prolonged, the patient becomes literally little more than “skin and bone,” irrespectively of the amount of food taken. It is during this third stage that the “trophic” changes become most marked. There is great liability to the formation of large and intractable trophic sores, and the bones may become exceedingly brittle. Urinary troubles in the form of incontinence or retention are very frequent, and not by any means limited to the later stages of the disease.

In all stages of the disease, but especially in the second stage, *fits* and *congestive* attacks are of frequent occurrence. These “G. P. fits” vary greatly both in severity and character. They usually involve only a small group of muscles, such as those of a finger or of one limb, but may affect one or both sides of the body, becoming almost indistinguishable from the epileptic seizure.

The twitching, clonic stage of the group of muscles involved is usually prolonged, and may even continue for several days, and is frequently followed by a *temporary* paralysis of the muscles affected. In a few

cases a condition of *status epilepticus* arises, causing death from exhaustion. Not infrequently the temperature of the affected side of the body is raised ( $100^{\circ}$ – $104^{\circ}$  F.), whilst that of the unaffected side remains normal, or nearly so.

*Congestive* or *apoplectiform* attacks are of frequent occurrence, and vary both in severity and duration. The patient may gradually or suddenly become very dull, or completely unconscious, the temperature is raised, the face usually flushed, and the breathing stertorous. This condition may last for a few moments or for several hours, and is not infrequently followed by paralysis of a temporary character and of varying extent. After both fits and congestive attacks there is usually a noticeable increase in the general mental and bodily deterioration.

*Remissions* or "lucid intervals" occasionally occur in all forms of the disease, and are of varying character. During these intervals the patient is apparently in unusually good health and, to the ordinary observer, mentally sound. Certain physical symptoms, however, persist, and a comparative mental enfeeblement is always present.

**Nursing points.**—It will be evident that the nursing of general paralysis requires a wide knowledge of practically the whole of the general and special nursing of all forms of insanity. Owing to the kaleidoscopic and sudden changes which may occur, every case must always be under constant and vigilant supervision. In no form of mental disease is the *tactful* influence of the nurse more necessary. The patients are, for the most part, so facile and distractable that tactful and quick-witted dealing with emergencies will often prevent disaster. A good example is that of a patient, a sailor, who, convinced that he knew more than the eagle with regard to the science of aviation, eluded the vigilance of his nurse, and having swarmed up the water spout of the building, was preparing to make a practical demonstration of his powers of aerial flight. A nurse challenged him, calling out that although he (the patient) was a sailor, he could not run up and down the water spout as quickly as the nurse. The stake was a pound of tobacco, the patient being a great smoker. The patient accepted the challenge, and scrambling down the water spout, was secured.

Choking during mealtime is a constant danger, owing to the greediness of the patient, who attempts to bolt his food, and also to disturbances in the power of swallowing. Great care must be exercised in the last stages of the disease with regard to the feeding of the patient in

order to avoid milk or other food being inhaled into the lungs, "food pneumonia" being the inevitable result. In these enfeebled cases, if there is any difficulty in swallowing, the milk should be thickened with plasmon or arrowroot, and in its administration the motto "little and often" rigidly enforced. The greatest care must be taken to avoid fractures of bones. So brittle and fragile do the bones become in some cases that the slightest pressure of the point of a finger upon a rib in lifting a patient may cause fracture. The condition of the bladder must be a constant source of anxiety, retention of urine, as already mentioned, being of very frequent occurrence, especially during and after fits and congestive attacks, and also in the last stages of the disease. Constipation is a complication which must be carefully avoided.

Bed-sores and trophic sores occur more frequently in this than in any other form of mental disease. It is only by constant and unremitting care that the former may be avoided and the latter prevented from unduly extending. Momentary carelessness in allowing a patient to remain too long on a bed-pan may cause extensive sloughing of the skin, the circular shape of which indicates only too forcibly the cause. In the bedridden cases contracture of limbs should be, if possible, avoided by gentle movements and straightening.

#### PRIVATE MENTAL NURSING

The difficulty met with in nursing a case of insanity in a private home depends not only upon the nature of the case, but also upon the conduct of the friends and relatives of the patient, who not infrequently treat the nurse with but little consideration. With regard to the care and nursing of the patient, it should be remembered that the principles of nursing are the same for both institution and private nursing. The patient must be controlled and tactfully disciplined, and it is in this respect that the nurse must expect difficulty on the one hand with the patient, who resents any restriction when in his own house, and on the other hand with the relatives, who are often foolishly indulgent towards the patient and exasperatingly interfering with the nurse in the performance of her duties. The room which the patient occupies should preferably be on the ground floor, quiet, and as private as the situation of the house will permit. It should be rendered hygienically suitable by the removal of all unnecessary furniture and ornaments, and by proper attention to light and ventilation. Every dangerous article must be



cleared away, such as picture cord, fire irons, hat pins, and so forth. Keys must be removed from the doors, and also the bolts taken off. The trained observation and experience of the nurse must guide all efforts in making the whole surroundings of the patient as far as possible safe, healthy, and comfortable. The principles of nursing must be strictly adhered to, but the nurse may find that the patient resists all efforts to maintain an efficient standard of personal cleanliness and of healthy daily routine, and with perhaps the relatives interfering and encouraging his resistance it may seem to the nurse that for herself it would save trouble if she allowed things to drift. Nurses who do so are unworthy to remain members of the profession. They should rather give up the case than permit the patient's welfare to be endangered in order to save themselves trouble.

In private nursing the nurse is free from the constant supervision of superior officers, and so there arises a danger of slackness developing in the carrying out of all those little details which are so important in good mental nursing.

The relatives of private patients are not infrequently wholly unreasonable in their demands with regard to the hours of duty of a nurse. Mental nurses must be fair to themselves, and should insist not only upon regular hours on and off duty, but also, in severe and difficult cases, upon a sufficient number of nurses being employed.

Finally, let the nurses, male and female, remember that to those who employ their services they are examples of the Nursing Profession, and that therefore their conduct, both general and professional, should be earnestly directed to maintain the noble tradition of their calling.



## CHAPTER XXXVI

### THE CARE OF THE AGED

BY ELEANOR C. BARTON

Provision for the Poor Aged Sick—Special Qualifications for Nursing the Aged Sick—General Considerations—Morbid Conditions often Associated with Old Age—Hypostatic Pneumonia—Broncho-pneumonia—Senile Dementia—Liability to Fracture—Arterio-sclerosis.

**Provision for the poor aged sick.**—In every civilised country some care at least is taken to provide suitable treatment for the aged sick who are unable to look after themselves. This may take the form of voluntary charity, such as the various institutions of district nurses, who visit the sick poor in their own homes, and are supported by voluntary contributions. Some few are treated in the hospitals, also supported by charity; but by far the greater number come into the parish infirmaries, to which a patient has the right to be removed if he be a resident in that parish, and ill and destitute.

As can well be imagined, the nursing is carried on under considerable difficulties in the homes of the poor, and many ingenious devices have to be resorted to in order to eke out the scanty resources of the home. There is generally a rooted objection to fresh air and soap and water, but in spite of this, most valuable work is done, not only in nursing the patient, but in educating the friends.

In the infirmaries everything possible is done to make the patients comfortable. The wards are large, bright, and well-ventilated, and the nurses as a rule thoroughly well-trained, and especially experienced in the management of old people.

**Some of the special qualifications required.**—The nursing of the aged sick calls for very special qualifications in the nurse. Some are by nature and temperament more suited to this kind of work, and prefer it, while to others it is uncongenial, and they find it impossible to adapt themselves to it.

A faculty of watchfulness and acute observation is necessary to

detect the sudden and often almost imperceptible changes which may occur in the patient, and which may require prompt treatment.

In managing this kind of case the nurse will have much need not only of gentleness, but also of tact and determination. It is often unnecessary cruelty to deprive the patient of what may be harmless little fads, and to expect him suddenly to break off the habits of a life-time, but at the same time when such deprivation is necessary, it must be carried through with firmness and consistency.

Patience in a marked degree is needed in successfully nursing the aged, not only to bear with equanimity the querulousness so often associated with this condition, but also to listen with cheerfulness to the oft-told tale.

It is an advantage if the nurse has practised the art of reading aloud, and can make herself heard and understood. Unnecessary shouting, and an inarticulate manner of speech, are equally aggravating to one whose sense of hearing may be failing.

The power of adaptability and of making the most and best of the surroundings is an invaluable quality in the nurse, where the patient is confined to bed and cut off to a great extent from intercourse with the outside world. Among other devices to add to his pleasure, a looking-glass can often be so fixed as to allow of his watching what is going on outside, and the cheerful companionship of a nurse who will gather up all the news that will interest her patient and keep him *au courant* with the events of the day, will help to lighten the tedium of many a weary hour.

**General points to be observed.**—The first essential in caring for the aged, especially when they are ill, is to make their surroundings as suitable and comfortable as is possible in the circumstances. Extremes of temperature or sudden changes, or any unnecessary exertion, should be avoided. To this end a room should be chosen if possible on the ground floor, with a sunny, cheerful aspect. It should be kept well ventilated, but at the same time warm, a temperature of about 60° being advisable.

Where it is possible a patient should not be allowed to become bed-ridden, but should be encouraged to get up for even a short time every day, a practice which is not only good for his general health, but also prevents many of the ills that arise from constant lying in bed.

The bed should be comfortable, not too wide, free from curtains

and hangings; if possible, a feather mattress should be avoided. If the patient is too helpless to get into a chair it is advisable to have a second bed in the room, so that he can be moved from one to the other. This allows of a more thorough airing and remaking of the bed than is at all possible where the same one is continuously occupied. The bed-clothes should be warm and light.

The diet will need careful regulating, less food will be required, but it should be given at shorter intervals than is necessary for the young and healthy. It should be chiefly farinaceous, nourishing, and easily digestible; a little wine or spirits often tends to improve the appetite and give a better night's rest. The bowels should be kept regular, but the patient should, if possible, be kept from worrying and fidgeting on this point.

The above remarks apply generally to the care of the aged. The following are some of the

#### MORBID CONDITIONS OFTEN ASSOCIATED WITH OLD AGE

1. **Hypostatic pneumonia.**—This is always a serious and often a fatal complication of even trifling illnesses which confine old people to bed, and may occur for instance after a fracture or a slight operation. Constant care and watchfulness are needed if this condition is to be avoided. It is the result of the feeble circulation which is found in the aged, added to the recumbent position, which causes congestion of the bases of the lungs. It may come on very insidiously. The patient has a little cough, and has considerable difficulty in clearing the air passages of the accumulated mucus which in younger people would be got rid of by vigorous coughing. The possibility of this complication must always be kept in mind in nursing these cases, and much can be done in the way of prevention by constantly changing the position, by propping him up in bed, or even moving him from side to side, and giving support by means of pillows, and by the judicious use of stimulants and other means of sustaining his strength.

2. **Broncho-pneumonia, or capillary bronchitis.**—This most deadly complication, which carries off many of the aged, may follow on a trifling catarrh which extends to the larger bronchial tubes and finally to the smallest. The ease with which it occurs shows the importance of taking precautions where an elderly person has only a very slight cold, and to prevent exposure to cold winds or chilly ill-ventilated

rooms. It is very important to keep the patient's room at an even temperature; a steam kettle may be required, and appropriate nursing measures, which have been touched on in former chapters.

3. **Senile dementia.**—This varies enormously in degree from slight restlessness, with a tendency to repetition, up to an almost maniacal condition. The condition is one of the most trying that the nurse is called upon to deal with. It is very apt to be aggravated at night; constant care and watchfulness are needed to prevent the patient getting out of bed and doing himself or someone else an injury. Tact and firmness are necessary in dealing with it; and a great deal can be done by a good nurse in the way of prevention in the early stages. Bed-boards carefully padded and fixed to the sides of the bed will be found most useful, and a skilfully tucked-in sheet will often control the patient without irritating him. These particular cases are sometimes peculiarly dirty in their habits, and need treating like babies, in order to keep them as clean and dry as possible.

4. **Paralysis**, though it may appear at any age, is perhaps peculiarly common in the aged, owing to their special liability to cerebral hæmorrhage, on account of the inelasticity of the arteries. These patients may be very helpless, and require constant attention. They are often very heavy to move, so that anything that facilitates changing, such as a short night-gown opening down the back, is an advantage both to the patient and to the nurse. During the period of unconsciousness, which generally accompanies the onset of this illness, special care must be taken in the feeding, lest the fluids get into the larynx and set up septic pneumonia. Later, too, much gentleness and care and patience are needed in the feeding of these helpless patients.

For those who have some amount of power still remaining there are several devices which would add to their comfort, such as a pulley fixed above the bed enabling the patient to raise himself by his arm or arms. There is a special kind of bedstead called the "equipoise," which can be adjusted by the patient himself with one hand, and by means of which he can change his position in any manner he pleases. For lifting patients who are quite helpless a special form of apparatus has been invented, which consists of a stretcher which is raised by cords working on pulleys fixed to both ends of the bed; this enables the bedding to be easily changed. For those who have paralysis of the sphincters, a bed with a central opening is sometimes advantageous.

The great object of course in the nursing of these cases is to prevent the patients from lying in a wet and dirty condition, which will favour the formation of bed-sores. The prevention and treatment of such sores have been described elsewhere (Vol. II., pp. 177-179).

5. **Liability to fracture** is caused by the absorption of a large part of the animal matter in bone, leaving chiefly the mineral part, so that the bones become brittle and inelastic. Thus a very slight accident, such as tripping over the edge of the carpet, may give rise to a fractured thigh in an old person, and sometimes these fractures decline to unite. Such patients are generally not confined to bed if it can possibly be avoided, owing to the danger of hypostatic pneumonia already mentioned.

6. **Arterio-sclerosis**, a condition of hardness and brittleness of the arteries owing to the deposit of lime salts in their walls, is very apt to occur as age advances, and may be the cause of cerebral hæmorrhage. The presence of this condition also explains the occurrence of gangrene which may occur in old people after slight injuries such as cutting a corn, or may arise spontaneously without any apparent injury. In this condition care is needed to keep the bowels freely open; the diet should be light and suitable, and the extremities must be kept warm.



## CHAPTER XXXVII

### SICK-ROOM COOKERY

BY C. C. DU SAUTOY

Methods and Proportions—Essentials of Cooking for Invalids—Things to be Remembered—Boiling—Baking—Stewing—Grilling—Making of Meat Teas, etc.—Frying—Braising—Rules for Making Palatable Dishes—Eggs, Milk, Custards, Fish, Sauces, Soups, Jellies—Useful Recipes for Nurses—Condiments, Flavouring, Decorations and Garnishes—"Drinks"—Diet in Diabetes—Cookery Terms.

WHEN cookery has to be taken as one of many subjects, as nurses have to take it, it is generally learned by means of recipes. This is anything but an easy method of learning, except perhaps to those with good memories, and when the recipes have been committed to memory the nurse has but a limited number of dishes to give her patient.

**Methods and proportions.**—In the following pages I hope to show an easier way of studying this important branch of a nurse's work, viz., by learning and thoroughly understanding methods and proportions. It will be found that certain foods are used in certain proportions, *e.g.*, gelatine is always used in the proportion of 1 oz. to 1 quart of liquid, be the latter beef-tea, stock, milk, wine, or water. There are, of course, exceptions; if the jelly is needed very quickly, or if the weather be warm, more gelatine must be used; if the circumstances are the reverse less will be sufficient.

**Essentials.**—In preparing food for invalids certain points must be insisted on: 1. It must be as nourishing as possible. 2. It must be digestible. 3. It must be palatable.

We must remember that foods which according to chemical composition are most nourishing may not be really so to an invalid on account of their indigestibility, though to a healthy person they might be quite digestible. "Food" is not a food in the true meaning of the word until, having undergone certain processes in the digestive tract, it is changed into substances which can be absorbed by the blood, and

assimilated by the tissues. Some foods, we know, are more easily acted upon by the digestive juices than others, and so give less work to the organs concerned in the process of digestion—and it is to be remembered that as a rule a sick person's alimentary canal is not in first-class working order.

The palatability of food plays an important part in the process of digestion, and so affects the amount that can be absorbed. Every effort should, therefore, be made to present food in as appetising a manner as possible. Very small quantities should be given, and whenever possible it should be a "whole" piece, *e.g.*, custard cooked in a small vessel, jellies set in small moulds (some holding about an ounce can be obtained). A small piece of steak grilled or steamed is often more appetising than a slice from a joint. Then great care should be taken to have a spotless tray cloth, glass, crockery, silver, etc., and a small cruet; and flowers or a small fern add very much to the appearance of the tray, and can nearly always be obtained. Before the food is given, see that the patient is comfortable in bed, warm round the shoulders, the mouth clean, the room aired, and that as many outward signs of sickness as possible are removed from his sight.

**Things to remember.**—The following points must always be borne in mind:—

Do not give re-cooked food; second cooking lessens the digestibility and nutriment of most foods.

Try to give as much variety as possible.

Serve in very small quantities.

If a patient has been ordered an excess of one kind of food, or is not to have some particular substance, try so to arrange the menu that neither is apparent to him.

Take great care to have plates, dishes, and food that is meant to be hot, really hot; and as to foods that are intended to be cold, see that they are so.

Try to have a few flowers on the tray, and pay special attention to the cleanliness of the cloth, silver, glass, and cruet.

Always see that the accessories are nicely prepared, *e.g.*, thin, nicely cut, and browned squares or fingers of toast for soups, gravy without fat, sugar sprinkled over milk puddings, and the sides of the pie dish clean (any dark marks can usually be removed with a damp cloth and salt); see also that fish is nicely garnished, and if fried served on

clean dish papers with no greasy marks round. Try to get as much variety in the diet as possible. This is difficult, especially if the patient's means are restricted, but it can be accomplished if a little thought is given to the matter; and as the amount of food, as well as the kind, taken by an invalid plays one might almost say the most important part in his recovery, no trouble in connection with it can be excessive.

#### METHODS OF COOKING

We generally say that we have eight different methods of cooking, viz., boiling, baking, stewing, grilling, steaming, soup-making, frying and braising.

**Boiling.**—We have to remember that when we employ this method our object is to keep the nutriment of the food in the food, *not* to extract it, and to do this we must pay attention to a few important details. Meat and fish, we know, contain certain substances which are soluble in cold water, but which coagulate with the action of heat, hence, when we boil meat (chicken, beef, mutton, etc.), we should expose it first to great heat (212° F.), under the action of which an insoluble coating forms on the outside of the meat and prevents the escape of the juices. This applies also to fish, so that in boiling we should plunge it into boiling water, let the water boil for from one to five minutes, according to the size and thickness, then leave it to simmer. The usual time allowed for boiling meat is twenty minutes to each pound, and twenty minutes over. The usual time allowed for fish is seven to ten minutes to each pound, and the same over, but in both cases this can be a general guide only. One must use common sense, for it stands to reason that a thick fish or piece of meat will take much longer to cook than a thin one of the same weight.

Boiling is not an ideal method to use for invalids, as it does not render food so digestible as do some other methods; but it makes many foods more digestible than does baking, though not so savoury.

Meat, chicken, etc., should be boiled in stock, or in water seasoned with vegetables and spices, and this, when the meat is cooked, should be used for soups. Boiling is the method generally used for cooking vegetables (though it is not an ideal one for this purpose), various forms of suet puddings, etc.

**Baking.**—This method renders foods more savoury than boiling, because certain substances are developed by the dry heat, and also

because of the greater heat which is employed in baking and roasting than in boiling; but foods cooked in this way, especially flesh foods, are not so digestible as foods cooked by boiling, steaming, and grilling. The object we have in view in baking is the same as in boiling, viz., to keep the nutriment in the food. In cooking any flesh foods, meat, chicken, fish, etc., they should be exposed to fierce heat in a hot oven for three to seven minutes, and the heat reduced for the remainder of the time. The time allowed for cooking meat by this method is fifteen minutes to each pound, and fifteen minutes over. Care should be taken that the meat is well basted. For cooking fish the rule is ten minutes to each pound, and the same over. Vegetables and fruit cooked by this method should be put in a "slow" oven as a rule, and large cakes in a hot oven, and the heat reduced at once, while small cakes are put in a moderately hot oven and kept at an even temperature.

Meat and fish, before being either roasted or boiled, should be wiped with a damp cloth, but should never be put into water till plunged into the boiling stock.

**Stewing.**—This is the most economical method we have, as inferior cuts of meat, old fowls, etc., can be cooked in this way and rendered digestible and palatable. As a rule, the meat, fish, vegetables, or whatever is the food to be cooked, should be cut into small pieces, a small amount of some liquid, stock, water, or milk, etc., added with various condiments and vegetables, and the whole cooked very slowly until tender. Tripe is a dish which is often used for invalids, and is best cooked by this method in either milk and white stock, or milk only, but of this there will be more to say later.

Stews are rendered more savoury if the vegetables are fried before the meat and stock are put in the pan.

**Grilling.**—This method is suitable for small pieces of meat, fish, chickens, etc. The chief points to remember are:—

To heat the grill before putting the meat on it.

To expose the meat to fierce heat for the first minute or two.

To turn the meat with a knife, not a fork.

Not to over-cook. The time usually allowed is seven minutes on the first side, and five minutes on the other, but the time must, of course, vary according to the thickness of the food.

The fire must be clear.

Maître d'hôtel butter ( $\frac{1}{2}$  oz. butter,  $\frac{1}{4}$  teaspoonful chopped parsley,

pepper and salt, and lemon juice mixed together and hardened on ice), and fried potato chips are generally served with grilled meats.

The advantages of grilling over baking and boiling are :—

Small pieces of food can be cooked.

It is a quick method.

Meat and fish cooked by this method are digestible because (*a*) a great deal of fat is drained from between the fibres, and no more fat or water is added, and (*b*) the meat is not likely to be over-cooked.

Meat and fish cooked in this way are generally appetising.

**Steaming.**—This is the best method to employ when cooking for invalids, for the following reasons :—

All the nutriment is kept in the food.

The heat being gradual and moist renders most foods digestible.

Small portions can be quickly and easily cooked.

The chief points to remember are :—

To wipe the meat or fish with a damp cloth.

To put the vessel containing the food over boiling water.

To keep the vessel covered.

Meat, fish, vegetables, etc., for sick persons should always be cooked by this method instead of by boiling. A special steamer is not necessary ; an ordinary saucepan with water in it, a plate to fit the top, on which the food is put, and a lid or basin over, are all that is needed. It is a pity this method is not more used for the cooking of potatoes, greens, etc., in England, instead of boiling.

**Making of meat teas, etc.**—The chief points to bear in mind in making teas, stocks, broths, and soups is that the object is to get all the nutriment possible out of the food into the liquid so as to have as far as possible a liquid food.

In making beef, mutton, veal, or chicken tea, the following rules must be observed :—

The meat to be finely shredded and freed from all fat.

The meat to be put into cold water.

The meat to be of good quality (gravy beef, etc., is of no use if the tea is to be nourishing), such as good steak.

The tea must never boil.

The proportion of meat to water is 1 lb. to 1 pint, and  $\frac{1}{4}$  teaspoonful of salt.

Remove all fat with kitchen paper before serving.



The rule that the tea should never boil is most important, as if the liquid containing the meat reaches over 180° F. the albuminous parts (which are the most nourishing) are coagulated, and kept in the meat when the tea is strained, and the liquid has no food value.

There are three methods for making beef-tea—(1) quick, (2) slow, (3) raw.

1. *Quick beef-tea*.—The meat, salt, and water should be put in a saucepan and allowed to stand for fifteen to thirty minutes; it should then be put over very moderate heat and stirred with a fork for twenty minutes, the tea keeping its bright-red appearance all the time. It can now for about three minutes be put over more heat, which will make it a slightly darker colour, or it can have a drop of colouring matter added if the patient objects to the red colour. If it is required to be a jelly, some dissolved gelatine (1 oz. to the quart) should now be added the jelly strained and moulded and used as required. Unless gelatine is added beef-tea should *never* jelly. If it does it has been badly made, or the wrong kind of meat used, and as a food it is valueless.

2. *Slow beef-tea*.—The ingredients are prepared as for quick beef-tea, but put in a jar. Cover and put the jar in a very slow oven or in a saucepan of water, the water being allowed to simmer; this takes from one to two hours. Slow beef-tea can be made into a jelly in the same way as “quick.”

3. *Raw beef-tea*.—The proportions for this are 1 oz. beef to 1 tablespoonful of water. The beef should be finely shredded, and the water added, and the tea put in a warm place for about thirty minutes; this should then be very thoroughly strained through a fine strainer and pressed, so as to get all the nutriment possible out of the meat.

The colour and taste of this beef-tea are objectionable to many people, and it probably has not more nutriment in it than the other kinds.

Mutton and veal teas are made in the same way as beef-tea, but are not so nourishing.

*Note*.—However good a cook there may be in the house, I should strongly advise the nurse to make the beef-tea herself.

Very much the same points have to be observed in the making of stocks and soups as in the making of teas. The chief exceptions are:—

Odd pieces of meat and bones can be used, as the people for whom the stock is intended are not depending on it for a “food.”

Vegetables, condiments, spices, etc., are used.

Soups I will deal with more fully in a later section (p. 93).

**Frying.**—Two kinds of frying are practised—(1) the dry or English method; (2) the wet or French method.

*Dry frying.*—This is not a good method to use for an invalid, for the following reasons :—

The fat used, being a small quantity, cannot be raised to the same temperature as a larger quantity, and so is likely to soak into the food, and thus lessen its digestibility.

It is extravagant, as the small quantities of fat remaining are usually wasted.

Its chief advantage is that it is convenient on account of the rapidity with which food can be prepared by it.

The chief points to remember are :—

The pan should be heated before being used.

The fat should be made as hot as possible.

The food, after being cooked, should be well drained on kitchen paper.

The food should be served on a very hot dish.

*Wet frying.*—In this method sufficient fat is used to cover the food. The fat can be used over and over again, and for sweet or savoury dishes, if well clarified after use, and if raised to the right heat before the food is put in. If attention is not paid to this last point the food will be greasy, and the fat spoiled, as the flavour of the food will be absorbed by the fat, thus making it unfit for any other purpose.

The chief points to remember are :—

The food must be protected with coating; this can consist of

(a) egg and bread crumbs, (b) egg and oatmeal, (c) batter.

The fat must be in sufficient quantity to cover the food.

The fat must be hot. A blue smoke should be seen rising from it, or perhaps a better test is to drop in it a crust of bread, and if this frizzles at once the fat is hot enough to use.

The food should be well drained and served hot.

This method is only suitable for foods which take a short time to cook, *e.g.*, small pieces of fish, previously cooked meat, fish, etc.

**Braising.**—This method of cooking is not very common in England, which seems a pity, as it is an economical and savoury way of preparing foods. It is really a combination of steaming, stewing and roasting,

the three processes being carried on at the same time in a braising pot—a saucepan with a special cover, in which hot charcoal is put. The meat is put on a “bed” of vegetables in the pan, a small quantity of stock added, and the lid containing the charcoal, or live coal, put over, and the saucepan kept over moderate heat till the contents are cooked. This method can be carried out without the special cover, the combined stewing and steaming process being first applied, and the meat then put in the oven or in front of the fire and baked or roasted in the ordinary way. Pieces of meat, old fowls, etc., can be cooked in this way, and rendered quite tender and savoury, and as the gravy and vegetables are served with the meat none of the nutriment is wasted.

#### RULES FOR MAKING PALATABLE DISHES

I now propose to deal with certain foods, and to give recipes and general rules for making them into palatable dishes. Before doing this, I will remind the reader that though ingredients are used in certain proportions, there are always exceptions to general rules. For example:—

For sauces flour is always used in the proportion of 1 oz. to 1 pint of liquid, except for a panada, that is, a thick sauce, when 2 oz. to 1 pint should be used.

Gelatine is used 1 oz. to 1 quart of liquid; if the jelly is not needed for several hours, and the weather is cold, less gelatine can be used; if the jelly is quickly needed, or the day be warm, a little more can be added.

Sugar for milk-puddings, blancmanges, etc., is used 2 oz. to 1 quart milk, except for milk jelly, when about 4 oz. is necessary.

Sugar for jellies, 6 oz. to 1 quart of liquid, except for egg jelly, when about 6 oz. to 1 pint is used.

Farinaceous substances for milk puddings, 4 oz. to 1 quart; for blancmanges, 3 oz. to 1 quart.

#### EGGS

We know that eggs consist of (1) an albuminous part (the white), which is very nutritious and digestible in an uncoagulated state, but is not so easy of digestion if coagulated; (2) fat (the yolk), which is in a very digestible form; (3) certain salts which are found in the yolk. Eggs, therefore, represent in their composition each class of food except carbohydrates. The albuminous part is present in a large quantity in proportion to the fat, so as a rule we eat with eggs some form of farinaceous food with or without fat, as bread and butter, bacon and bread, farinaceous puddings, etc.

Eggs are often the most important article in certain dishes, *e.g.*, omelets and soufflés, and they are used to enrich cakes, puddings, milk, soups, etc.

To decorate sweet and savoury dishes they are used either raw or cooked. The white can be coloured by the addition of colouring matter, or a salmon colour can be obtained by cutting a lemon with the knife the egg is beaten with.

**Omelets.**—In the form of an omelet, if properly prepared, eggs are most digestible, but an omelet is considered a difficult dish by many nurses, though with a little practice it need not be so.

Take 2 eggs,  $\frac{1}{2}$  oz. butter, 1 tablespoonful milk, with flavouring or condiments. Beat the eggs (yolk and white together), add the milk and flavouring, heat the butter in an omelet pan, and pour the egg mixture in just before the butter gets brown; if carefully watched the butter will be seen to separate a little, which is the time to pour in the mixture; stir it with a fork till the omelet is just set, scrape the egg from the handle part of the pan towards the middle about 1 inch (this is to shape it), then turn one third over, then the opposite third, so that an oval shape is formed; this should be turned out into a hot dish, and served at once. It should be a pale brown colour, and not be in separate pieces as scrambled eggs are.

The omelet should be called by the name of the "extra" ingredient which is used, *e.g.*, if vanilla is added, vanilla omelet, if ham or other chopped meat (this should be put in the fat just before the eggs), ham, veal, beef, etc., omelet. Other materials which can be used are any essence liked, cheese, vegetables, fish, Bovril, or Liebig's instead of milk, parsley, onions, etc.

The principal ingredients should always be used in the same proportion, and the method of making is the same, whatever savoury or sweet flavouring is used.

A sweet omelet can be "caramelled" by sprinkling it with caster sugar, and can be marked in different designs with a hot skewer.

**Soufflé.**—Eggs are the most important item in this dish also, but they are differently prepared; the white is divided from the yolk and beaten up separately.

The ingredients required for soufflés are  $\frac{1}{2}$  pint panada, *i.e.*, thick sauce, 2 eggs, with flavouring or condiments. Separate the yolk from the white and beat the former into the panada, add to this mixture any flavouring liked (sugar or salt, and any extra ingredient which the patient may fancy), then beat up the whites on a plate with a knife. When they are stiff enough the plate can be turned upside down, and the egg will not come off, then with great care stir the white into the other mixture, pour all into a greased pie-dish or basin, and cook in a quick oven, or steam. To tell when cooked, put a skewer into the middle; if it comes out clean the soufflé is cooked, and should be dished up. If in a pie-dish put it on a hot dish, or if it has been steamed, turn it out of the basin, garnish with parsley, lemon, eggs, etc., or sprinkle with sugar.

The chief points to remember in making soufflés are:—

The panada must be well cooked.

The yolks must be well mixed in it.

The whites must be very stiff before being added to the other ingredients,



and they should be stirred in with as few cuts as possible, but at the same time thoroughly well combined with the panada.

Directly the whites are added the mixture should be cooked. The time required for cooking a soufflé made of the proportions I have given is from twenty to thirty minutes.

Various ingredients can be added to the foundation given, *e.g.*, oysters, or any other fish, dried fruits, flavourings, meats, vegetables, etc.; care should be taken that they are cut into small pieces. Instead of a panada, potato can be used, the yolks, etc., mixed with it, thinned with milk if necessary, and the mixture baked in the potato jackets. Arrowroot, flouida, etc., can be used for the panada instead of ordinary flour.

The panada consists of  $1\frac{1}{2}$  oz. butter, 1 oz. flour (wheaten, flouida, corn-flour, etc.),  $\frac{1}{2}$  pint liquid. Melt the butter in a saucepan, add the flour, stir well together, add half the liquid, bring to the boil, stirring all the time; then add the remainder of the liquid, and boil for about seven minutes, stirring thoroughly all the time as the mixture quickly burns. The liquid used can be milk, stock (meat or fish,) beef-tea, Liebig's or Bovril, with water, coffee, etc. The panada should be cool before the eggs are added to it.

When making soufflés for diabetic patients, plasmon can be used in the panada instead of flour.

An *omelet soufflé* is made of 2 eggs,  $\frac{1}{2}$  tablespoonful milk,  $\frac{1}{2}$  oz. sugar, flavouring. Separate the eggs, beat the yolks, milk and sugar, with a whisk or two forks till quite thick, beat the whites and carefully cut them in, fry in the same way as an omelet, but when it is set hold the pan in front of a clear fire, or under a salamander, for about a minute, to get a brown colour, fold in half, add jam if liked, and serve at once on a hot dish.

**Scrambled eggs.**—This is often thought to be a very easy way of preparing eggs, but in reality it is a difficult matter to cook the egg just enough and not too much. Each egg should have 1 tablespoonful of milk beaten with it, and pepper and salt added. Melt  $\frac{1}{2}$  oz. butter in a saucepan, and stir in the egg mixture; directly it is just set put it on hot buttered toast and serve hot. Cheese, vegetables, chopped meat, etc., can be added to the mixture before cooking, and beef-tea, Liebig's, or Bovril used instead of milk.

**Poached eggs.**—This is one of the ways in which eggs are rendered more digestible, and it is not a difficult or lengthy way of preparing them, but attention should be paid to the following points:—

Break the egg into a small cup, not direct into the water.

Add salt and a few drops of lemon juice to the water.

Have a flat sauté or frying-pan.

Have the water rapidly boiling when the egg is put in, but do not let it boil after the egg is in it, draw the pan on one side, and let it poach gently, lift it carefully out on a fish slice, drain the water from it, and trim, then put it on hot buttered toast, garnish with parsley and serve hot.

**Eggs à Madame.**—This is a good way of serving eggs for invalids, and is done in the following way:—



Grease a small tin mould (dariole), ramakin case, or small Liebig jar with clarified butter, and coat with chopped parsley, meat, fish, etc., put the egg carefully in and steam in a flat pan till the egg is set, loosen the contents by carefully inserting a knife round, then turn the egg out on buttered toast or croûtons.

**Egg Jelly.**—Ingredients,  $\frac{1}{4}$  oz. gelatine, 1 lemon, 1 egg,  $\frac{1}{2}$  pint liquid, 3 oz. loaf sugar. Put the gelatine, thin lemon rind, sugar, and beaten egg into a saucepan, strain the lemon juice, make it up to half a pint with cold water, add this to the other ingredients, and stir over very moderate heat till the gelatine is dissolved, strain and mould in prepared moulds, turn out when set.

It is important to remember (1) that the jelly does not boil, and (2) to peel the lemon very thinly. This is a nourishing jelly on account of the egg used. Some wine can be added instead of all water, and a savoury egg jelly can be made by substituting beef-tea or stock for water and lemon juice, and condiments instead of sugar.

**Eggs in batter.**—Pour some batter in a greased baking tin, place at regular intervals plain pastry cutters, put an egg into each, and cook in a fairly quick oven; remove the cutters and carefully turn the batter on to a hot dish. This dish can be used for a diabetic if plasmon is used instead of wheaten flour. Ingredients for the batter, 2 oz. flour, 1 egg,  $\frac{1}{2}$  pint milk or stock, condiments. Put the flour in a basin, and the egg (unbeaten) in the centre, mix a little of the flour with it, then add the liquid gradually till about half has been worked in, thoroughly beat the mixture with a wooden spoon for about seven to ten minutes, then add the remainder of the liquid. The batter is improved if allowed to stand from half an hour to two hours before cooking.

#### MILK

Milk is often called a perfect food, for it contains the representatives of each of the great groups of foods, in casein, cream and sugar, water and salts. It is largely used for sick persons, and it often becomes a great tax on the nurse to try to find some new form in which to present it to her patient.

When a milk diet is ordered the doctor will often allow the milk to be solidified with gelatine, or made into a junket, and occasionally milk tea or coffee can be given, or the milk can be flavoured with lemon peel or cinnamon, cloves, etc., which are steeped in it, or a drop of some of the various flavouring essences can be added.

**Milk jelly.**—Ingredients,  $\frac{1}{4}$  oz. gelatine,  $\frac{1}{2}$  pint milk, sugar, and flavouring. Put the gelatine, milk, sugar and flavouring in a saucepan or basin, and stand on a cool part of the stove, stir frequently till the gelatine is dissolved, strain and mould; if the jelly boils it will curdle, and if it is moulded when too warm the gelatine will sink to the bottom of the mould. Lemon peel very thinly cut off the lemon makes a good flavouring ingredient.

**Junket.**—Ingredients,  $\frac{1}{2}$  pint milk, 1 teaspoonful rennet,  $\frac{1}{2}$  oz. sugar. Warm the milk, add the sugar and rennet, stir well, and pour into a glass dish, serve when set with cream on top, if liked.

Milk tea should be made by first pouring about 2 tablespoonfuls of boiling water on the tea, then pour on the boiling milk.

Coffee is also best made in the same way.

I need hardly remind a nurse that milk quickly makes a mouth "dirty," and unless great care is taken to clean it frequently, the milk will taste nasty, and consequently the patient get a distaste for it before he would otherwise do.

**Milk puddings.**—I have already mentioned the proportions in which farinaceous foods and sugar are used in conjunction with milk, so I will give one illustration only of a milk pudding, and the reader can substitute other foods for the one mentioned.

**Ingredients,** 1 oz. pearl barley,  $\frac{1}{2}$  pint milk,  $\frac{1}{2}$  oz. sugar, 1 egg, if liked, and any flavouring preferred. Wash the barley in cold water, put it in a pie-dish, add the milk, sugar, beaten egg, and flavouring, and if for a patient who is to have as much fat as possible, add  $\frac{1}{2}$  oz. butter and an extra yolk, and bake in a very moderate oven for from forty to fifty minutes.

**Blancmange.**—**Ingredients,** 1 oz. cornflour, 1 pint milk, 1 oz. sugar, flavouring. Mix the cornflour with a little cold milk, bring the rest to the boil, pour it on the flour, return all to the saucepan and boil, stirring all the time till the mixture comes away loosely from the bottom and sides of the pan, add the sugar and flavouring, and mould in a damp mould; turn out when set.

*N.B.*—Ground rice, florida, arrowroot, etc., can be used instead of cornflour.

#### CUSTARDS

The word custard denotes a mixture of milk and eggs, and we can have it either cooked or raw.

For **cooked custard**, eggs are generally used in the proportion of 2 to  $\frac{1}{2}$  pint milk, though 1 to  $\frac{1}{2}$  pint makes a good custard. The eggs should be well beaten, then the milk added, also sugar and flavouring, or salt, pepper and meat, parsley, or fish, etc. For **boiled** or "cup" custard pour the ingredients into a jug or jar, stand this in a saucepan of warm water and let the water simmer, stir the custard till it "coats" the wooden spoon, then quickly pour it into a cool vessel. If it is left to cool in the hot vessel it will probably "crack." If it is not necessary for the custard to be a very nourishing one the milk can first be thickened by adding 1 teaspoonful flour to 1 pint milk, and only one egg used; the flour should be well cooked in the milk before the egg is added.

**Steamed custard.**—Add to the custard sugar and flavouring, or some savoury substance, and pepper and salt, pour into a greased basin, or into some tin moulds (darioles) or Liebig jars, stand in simmering water, and cook slowly till firm, turn out and serve the sweet ones with a jam, sauce, or sugar, etc., and put the savoury ones on buttered or anchovy toast, and serve either hot or cold. Care must be taken in turning out the custards, and the vessels they are put into must be thoroughly greased.

**Baked custard.**—Take milk and egg in the same proportion, add flavouring or condiments, and pour the mixture into a slightly greased pie-dish, bake in a very moderate oven until firm, about twenty minutes. Serve hot or cold.

The chief points to remember in making custards are :—

To have good eggs and milk.

To beat the eggs well, but not to a froth.

To expose the custard to very moderate heat.

#### FISH

Fish is generally divided into three groups, (1) white, (2) oily, (3) shell.

**White fish** is, as a rule, most digestible, and therefore nourishing for invalids. It is called white as the flesh is usually a white colour, and the fat or oil is stored in the liver and not distributed between the flakes of the flesh. Examples of this class are sole, lemon sole, whiting.

**In oily fish** are classed those fish in which the oil is found in the flakes of the flesh as well as in the organs. This makes the fish more nourishing, but not so digestible. Examples are salmon, eels, sprats.

**Shell fish.**—The name explains itself. The only shell fish generally allowed an invalid are oysters, and these are best taken either raw or very slightly cooked.

The fish most easy of digestion is said to be sole, and next to that lemon sole and whiting.

The best method of cooking fish for an invalid is generally by steaming, though stewing is good, especially for eels, which are the most easily digested of the oily fish. After the fish is steamed it should have a good white sauce poured over it, and be garnished with lemon and parsley or coral and parsley.

Fish can be filleted, each fillet sprinkled with pepper, salt and lemon juice, put on a greased plate or tin, and either baked or steamed. The bones should be used to make stock, and this utilised for the sauce.

Fish pudding, cakes, etc., if used for invalids, should not be made of already cooked fish, which loses its digestibility and nutriment by re-cooking.

Eels should be cleaned, cut into pieces about 1 inch long, slowly brought to the boil in water, allowed to boil about ten minutes, strained, and then stewed till cooked in milk which should previously be slightly thickened with flour to prevent it from curdling. When the fish is cooked remove each piece from the liquid, make a sauce of the latter, return the fish, re-heat, and serve hot.

The eel is very nourishing, and as it is also rich in fats it is a good fish for tubercular patients.

#### SAUCES

To make a sauce is considered an easy matter, and so it is, but how often does one taste a really well-made sauce?

The foundation for many sauces is  $1\frac{1}{2}$  oz. butter, 1 oz. flour (wheaten, corn, etc.), 1 pint liquid.

*Method.*—Melt the butter in a saucepan, add to it the flour and stir the two over the fire till well mixed, then add half the liquid, and boil for five minutes. Do not be alarmed at seeing "lumps"; if the butter and flour have been well mixed, the lumps will all disappear with boiling. Add the remainder of the liquid, and boil

for five minutes again, stir thoroughly *all* the time, add the flavouring ingredients, and the sauce is ready for use.

The following are the chief points to remember :—

Thoroughly blend the butter and flour before adding the liquid.

Never leave off stirring while the sauce is cooking.

Remember that the sauce is not ready directly it is thick ; flour to be digestible must be very well cooked, and this can only be accomplished by prolonged boiling.

The first lot of liquid added must be cold.

Sauces can be enriched by the addition of cream, yolks, whole eggs, or an extra piece of butter ; all these should be added just before the sauce is required. The liquid used can be milk, milk and water, fish or white meat stock for white sauces, though it is best as a rule to use half milk and half fish stock for fish sauces, or meat stock for meat.

To make a **brown savoury sauce**, brown the butter before adding the flour, and brown the flour when it is added, use brown stock, beef-tea, Liebig's, Bovril, or soup, for the liquid, with or without milk.

To make a **sweet brown sauce**, make a white one in the ordinary way, and colour with burnt sugar.

Sugar flavouring, essences, shrimps, oysters, capers, chopped egg, parsley, etc., should be added after the foundation is prepared, or the milk can be flavoured beforehand by "steeping" with onion, cloves, lemon peel, cinnamon, etc. A few drops of lemon juice are a great improvement to either a brown or white, sweet, or savoury sauce.

For *maître d'hôtel* sauce the ingredients are  $\frac{1}{2}$  pint sauce,  $\frac{1}{2}$  teaspoonful chopped parsley, 1 teaspoonful lemon juice.

#### SOUPS

Many of the rules to be observed in making stocks and beef-tea have to be paid attention to when making soups. Most soups are not very nourishing, but are useful as appetisers and aids to digestion, and are generally divided into (a) thin, (b) thick, (c) *purées*.

**Thin soups.**—Under this heading we include clear soups or *consommés*, and for these a good white or brown stock should be obtained and cleared in the same way as jelly (page 94), then some form of garnish added from which the soup takes its name, *e.g.*, thin strips of carrots and turnips—*consommé julienne* ; the same vegetables cut into small fancy shapes—*consommé macédoine*. Or a poached egg can be added, which, of course, adds to the nourishing properties.

**Thick soups.**—In this group we have soups made from stocks, milk, etc., but which have to be thickened by the addition of some such material as bread, flour, cornflour, arrowroot, etc.

***Purées.***—In this class we have some very nourishing soups, *e.g.*, split pea, lentil, haricot soups—and in passing I should like to give a hint to district nurses especially. English working people seem always to associate soup with poverty, and seldom have it, or when they do they do not consider they have had a "dinner." Here



is an opportunity for district nurses when on their rounds to point out to patients and others how very nourishing and appetising and easy to make are these soups, and also how cheap ; and to put it to them, what nicer dinner can school children have on a cold day than a basin of thick pea soup, with or without a suet pudding to follow ? This, I know, is not invalid diet, but if people understood the art of feeding better than many do, the number of patients would soon be materially reduced.

#### JELLIES

A jelly is nourishing or stimulating according to the ingredients used, exclusively of the gelatine. Isinglass and gelatine, though nitrogenous substances, are of little or no value as foods. Isinglass is obtained from the swimming bladder of the sturgeon, and has a slightly fishy smell when being dissolved. Gelatine can be obtained from a number of different substances—bones, hoofs, gristle, etc., and even from old parchment. It has a slightly gluey smell when melted, is cheaper than isinglass, and for all practical purposes quite as good, the nutritive value of the two being about the same.

**Clear jellies.**—The directions that follow apply to “clear” jellies, though the reader will see from the remarks on eggs and milk, and beef-teas, that there are other kinds.

The usual foundation for clear sweet jellies is 1 oz. gelatine, 6 oz. loaf sugar, 4 lemons, whites and shells of 2 eggs, 1 quart liquid, and if liked, 1 inch stick cinnamon and 6 cloves. Put the gelatine, sugar, and 1 pint of liquid into a jelly pan, or ordinary enamelled saucepan, peel the lemons thinly, taking care to get the yellow rind only, not any white, add the peel, strain the juice, and make it up to 1 pint with cold water, add three-quarters of this mixture to the other ingredients, beat the whites of eggs slightly and add with the crushed shells and spices, put the pan over moderate heat, beat with a whisk till the jelly begins to boil, stop stirring immediately and let the jelly boil to the top of the pan, then add half the remaining liquid, boil up again, add the remainder of the liquid, boil up a third time, then put the saucepan on a cool part of the stove till the scum cracks, which takes about ten minutes. In the meantime prepare the jelly bag (*see* below), then turn the contents of the saucepan into the bag, and allow it slowly to filter through ; if the jelly is not clear after one filtration, pour it through a second time ; mould the jelly, and put in a cool place to set.

The chief points to remember are :—

Take care to have a very clean saucepan, and thoroughly to wipe the eggs and lemons before using.

Stop whisking directly the jelly begins to boil.

Let it drain through the bag slowly, and never stir it or squeeze the bag ; if it begins to set in the bag, stand a jug or jar of boiling water in the centre.

The bag is merely something to hold the contents, the actual filtration medium is the scum raised from the jelly itself.

*To prepare the bag.*—Take a clean “tea” cloth, tie it on the four legs of a chair turned bottom upwards on a table or on another chair, put a basin under the cloth, and pour through it some boiling water ; it is now ready to strain the jelly.



*To prepare the moulds.*—If tin ones, scald, then dip in cold water and use wet ; if china or glass, dip in cold water only.

*To turn out the jellies.*—If the moulds are thick and large, loosen round the edges, then hold for a few seconds in hot water ; the jelly should after this come out quite cleanly. If the moulds are of tin, or if thin china moulds are used, it may not be necessary to dip them in the hot water, but if it is necessary they should be very quickly put in and out again, or the shape of the jelly will be spoilt.

The liquid used may be water and lemon juice only, or water, lemon juice, and wine. If the wine is a dark one, *e.g.*, port, the jelly should be the colour of the wine, and a teaspoonful of black currant jelly added with the other ingredients, or a few drops of cochineal added before moulding, will bring about the desired result.

Oranges can be used instead of lemons, and layers with different fruit can be obtained by pouring into the mould a little jelly ; when set put on it some fruit, and add more jelly and so on, till the mould is full. The layers can, if liked, be of different colours, or alternate layers of blancmange and jelly can be used, the former must be cool before being used, and care should be taken that each layer is firm before another is added.

A savoury jelly is made in the same way, using condiments instead of sugar, and stock instead of water.

Clear soups are "cleared" in exactly the same way as jellies.

#### USEFUL RECIPES FOR NURSES \*

**Quenelles.**—These are not easy to make, and require a great deal of practice. The ingredients necessary are 4 oz. raw white meat minced, 2 oz. panada, pepper and salt. Mix all together, and shape on a dessert spoon which should be previously dipped in hot water, gently loosen the quenelle, and put it into simmering water and poach ten to twenty minutes ; lift out on a flat strainer, and put on buttered toast, or on a hot dish without the toast, and pour some white sauce over. This is a digestible and palatable way of serving meat, and can be conveniently done in very small quantities, and the expense is not great.

**Chicken panada.**—Ingredients, 4 oz. raw chicken, 4 oz. panada, pepper and salt. Finely mince the chicken, and add to it about 3 oz. white stock or milk, and simmer very slowly or cook in slow oven for about ten to fifteen minutes. Strain the meat and make a thick sauce with the liquid, add the chicken to it and re-heat, but do not boil ; serve on a hot dish with croûtons of bread. Veal or rabbit can be cooked in the same way.

If raw meat has to be given, make a panada and add the minced meat to it, and stand the vessel containing the panada in a pan of boiling water for a few minutes ; this will heat the mixture without cooking the meat.

**Stewed sweetbread.**—Soak the sweetbread for about two hours, then blanch and rinse in cold water, cut it into pieces about two inches in size, and stew in milk or white stock for fifteen to thirty minutes, remove the sweetbread from the liquid, and make a sauce with the latter, return the meat to it and re-heat. Sweet-

\* All the ingredients mentioned are not always suitable to every invalid.

bread can also be "coated" and fried, steamed, baked or grilled. For the two latter ways of cooking it should be prepared as for stewing, put between two plates till cold, split open, and grilled; butter should be added during the grilling, and the sweetbread served on toast.

**Tripe.**—This can generally be bought ready dressed, and it then needs to be blanched; it can be stewed in milk or white stock for one and a half to two hours, and the stock used for the sauce. Onions can be stewed with it if liked.

**Steamed chop or steak.**—Put the meat on a plate over a saucepan of boiling water, cover, and steam for twenty to thirty minutes.

**Scotch collops.**—A mutton chop ( $\frac{1}{2}$  lb.), 1 teaspoonful finely chopped onion,  $\frac{1}{2}$  oz. butter, 1 teaspoonful flour,  $1\frac{1}{2}$  gills stock. Mince the meat, heat the butter in a saucepan, add to it the onion, fry until a light brown colour, add the flour, mix well together, add the stock and boil for ten minutes, then add the meat and simmer for half an hour, dish on a hot dish, garnish with croûtons and parsley.

**Cakes.**—Strictly speaking, this subject does not come under the heading of sick-room diet, and probably every nurse has various recipes for cakes which she "swears by," and tries to learn off each set of ingredients and method by heart. But if she dissected these recipes she would most likely find that the proportions of the essential ingredients were the same in each, though the quantities may differ.

Cakes usually consist of flour, shortening, liquid, sugar, some flavouring matter, or fruit, etc., and baking powder.

The flour used can be wheaten, corn, wholemeal, etc., or arrowroot, ground rice, or a mixture of two or three. The shortening used can be butter, margarine, lard, or dripping; and it is used in the proportions of  $\frac{1}{4}$  to 1 lb. to 1 lb. of flour, according to whether a plain, medium or rich cake is required. The liquid can be milk (whole, skim, sour, or butter), eggs, water, wine, coffee, etc., and the amount varies according to the kind of flour used. Sugar, caster or Demerara, can be used, and the amount should depend upon the amount and kind of fruit used, etc., but varies between  $\frac{1}{4}$  to 1 lb. to 1 lb. of flour.

Baking powder is best home made (2 oz. cream of tartar, 1 oz. carbonate of soda, and 2 oz. ground rice, well mixed and sifted together). Two teaspoonfuls to each pound of flour is the usual amount, though if a number of eggs are used less baking powder is needed.

Fruit is used in the proportion of  $\frac{1}{4}$  to 1 lb. to each 1 lb. of flour, and should be thoroughly cleaned before being used, either washed and well dried, or rubbed with flour, and all the stems removed.

Most cakes are made by one of the following methods:—

1. *For rich cakes.*—Cream the butter and sugar, viz., beat both together with a wooden spoon till it is the consistency of cream, then add in small quantities alternately the flour sifted (with which has been thoroughly well mixed the baking powder), and liquid (eggs and milk), beat thoroughly between each addition, and lastly add the flavouring and fruit; bake in prepared tins.

2. *For plain cakes.*—Sift the flour and baking powder, "rub into" these in-

redients the shortening, add the sugar, fruit, caraway seed, or flavouring, and then add the liquid, thoroughly beat the mixture, and bake in prepared tins.

*To prepare cake tins.*—1. For a rich cake thoroughly grease the tin with clarified butter, line it with kitchen paper, which should come about two inches above the top of the tin, then brush over the paper with clarified butter. 2. For a plain cake grease the tin with dripping or whichever shortening is used in the cake. 3. For sponge cakes thoroughly grease the tins with clarified butter, then coat with equal quantities of sugar and flour well mixed together.

Large cakes should be baked in a moderate oven and small ones in a fairly quick oven.

Soda cake can be made by using 1 teaspoonful of soda to each pound of flour, instead of baking powder, and it should be dissolved in the milk, and the latter used warm.

*A simple way of making sponge cakes.*—Take 2 oz. caster sugar, 2 oz. flour, 2 eggs. Beat the eggs and sugar together till the mixture is as thick as thick cream and a whitish colour, then sift in the flour, and cut it in with as few cuts as possible, put the mixture in tins and bake ten to twenty minutes, according to thickness.

*For Swiss Roll.*—This same mixture can be baked on a flat tin; turn out when cooked on to sugared paper, quickly spread jam over, and roll.

The most important points to remember are :—

The eggs and sugar must be thoroughly well beaten before the flour is added; this will probably take twenty minutes.

The flour should be cut in with an iron spoon, and no unnecessary stirs given, though each particle of flour must disappear.

Take great care in preparing the tins, as well as in removing the cakes from them.

*To tell when cakes are cooked.*—Test large ones with a skewer or knife. Small ones (sponge, buns, etc.) should be firm to the touch, viz., spring up at once, leaving no impression of the finger, and they should lift cleanly out of the tins.

All cakes should be put on a sieve to dry directly they are removed from the oven.

#### CONDIMENTS, FLAVOURING, DECORATIONS AND GARNISHES, "DRINKS"

**Condiments.**—Under this heading we include salt, pepper, lemon juice, spices, and such materials. They are not, strictly speaking, foods, but they materially help in the digestion of foods by making them more palatable and stimulating the salivary and gastric glands.

Lemon juice is an especially suitable condiment to use for invalids for the above reasons, but much pepper, mustard, and spices are better left for healthy people. Pepper and other spices should never be put into beef-tea. When we speak of a condiment we mean a flavouring ingredient to be added to a savoury dish.

**Flavouring.**—By this we generally mean an ingredient which is to be added to a sweet dish. Examples of flavouring are various essences and spices, *e.g.*, cloves, cinnamon, angelica, lemon peel.

**Decorations and garnishes.**—The former word we use in connection with sweet dishes, and the latter in connection with savoury dishes.

Some substances used for *decorative purposes* are sugar, prepared in different ways, white of egg, also "treated" in some way, angelica, cloves, cochineal and vegetable colouring extracts, crystallised fruits and flowers, and others too numerous to mention.

The materials most generally used for *garnishes* are lemon cut into fancy shapes, parsley chopped or in sprigs, coral, hard-boiled egg, grated hard-boiled yolk and beaten-up white of egg, and various salad vegetables, *e.g.*, tomato, cucumber, etc.

Under the head of **drinks** I do not propose to touch upon liquid foods, such as milk, beef-tea, bovril, Liebig's, etc., but drinks pure and simple.

**Toast water.**—Toast a dark even brown a piece of thin stale bread, and pour over it 1 pint of boiling water, allow to cool and use. Strips of lemon peel or a few drops of any flavouring essence can be added if liked.

**Barley water.**—Take 2 oz. pearl barley, 1 pint cold water, 1 lemon, sugar.

*First method.*—Blanch the barley, add to it the cold water, thin rind of lemon and juice, sugar if liked, and simmer till the quantity is reduced to about two-thirds of the original amount, strain and use with or without soda water. If the barley water is needed to dilute milk which is intended for babies or adults, no lemon or sugar should be used.

*Second method.*—Use the same ingredients as for the first method, blanch the barley, then put it in a jug with the lemon rind and sugar and pour the boiling water over them, stir till the sugar is dissolved, and strain when cold.

Oatmeal, sago, or rice water can be made in the same way as the barley water.

**Lemonade.**—Take 2 lemons, 1 pint water, 1 oz. loaf sugar. Wipe the lemons with a damp cloth, and take off the yellow peel. If any of the white pith is used the lemonade will be bitter. Peel off the pith and cut the lemon into thin slices, put the yellow peel, slices of lemon, and sugar into a jug, and pour on to them a pint of boiling water, stir till the sugar is dissolved, and strain when cold.

If a very clear lemonade is required, make in this same way, but leave out the slices of lemon, using the yellow rind only and less sugar.

Orangeade, citronade, etc., can be made in the same way, and pleasant drinks can be made by pouring boiling water on to various fruits, like apples, pears, etc.

#### DIET IN DIABETES

Strict dieting is said to be the only way in which diabetes can be arrested, and as there is already too much sugar in the blood, sugar and starch (which is changed into sugar in the alimentary canal) have to be forbidden to the diabetic patient. This is a serious matter when we consider how largely an adult's food is made up of starch. Wheaten bread and potatoes, for instance, consist almost entirely of starch; flour, we know, is used for cakes, puddings, sauces, pastries, etc., all of which are considered necessary adjuncts to nearly every meal. Before giving



some suggestions for the feeding of diabetics, I will remind the reader of a simple test for sugar and starch. If the matter to be tested is in the form of a powder, put a quarter of a teaspoonful into a test tube, half fill with cold water, boil over a spirit flame, and add a few drops of iodine. If *starch* is present, a blue colour is obtained. To test for *sugar*, put a small quantity of the substance to be tested in a tube half full of water, boil over a spirit flame, and add a few drops of Fehling solution : if grape sugar is present, a brick-red colour is obtained.

Most of the foods for which I will now give recipes can be easily made with very little trouble, and during the cooking of an ordinary meal.

**Bread.**—No really good substitute has yet been found for wheaten bread. Gluten, bran, almond, and plasmon can all be made into "bread," but I fear that a diabetic patient does not appreciate any of them as he would do ordinary bread. Gluten bread can be much improved by being toasted or fried.

**Soups.**—Under this heading we include teas and broths, all of which can be given to diabetic patients if no vegetables containing starch are employed in their preparation. The soup question is not a difficulty, as various flavourings can be used, such as cabbage, herbs, lettuce, spinach ; and chopped meat, poached eggs, chopped parsley, cucumber, etc., can be served as a garnish. The soup can be thickened by the addition of plasmon flour.

**Fish.**—Most varieties of fish are allowed for diabetics, so the ingenuity of the cook comes in in the preparation of the sauce to be served with it. *Melted butter*, an ordinary *white sauce*, made with plasmon instead of wheaten flour, and *mayonnaise* are the three most useful sauces, and the second may be used as a foundation for several others.

**Meats.**—Any meat, butcher's or game, can generally be used, but the more digestible meats, such as chicken, rabbit, etc., should be more often used than beef. Sweetbread, tripe, sausages (if made with non-starch flour and bread), make a nice change, and are usually allowed if so prepared.

**Vegetables.**—Nothing can take the place of the forbidden potato, but almost any green vegetable is allowable, as well as cucumber, marrow, etc. Cabbage should be chopped after being cooked, and mixed with butter, pepper and salt. Lettuce can be prepared in the same way or stewed in brown gravy.

**Puddings.**—These give more trouble than the other courses. In some



cases unripe fruits are allowed, and when this is the case the cook's difficulty is considerably lessened. Fruits should be cooked in water to which saccharin has been added instead of sugar.

**Junkets, custards, soufflés, jellies** (milk and egg), can all be given if milk is allowable, using saccharin instead of sugar, and plasmon or almond flour instead of the wheaten flour.

*Diabetic Diet for One Week*

<i>Day.</i>	<i>Breakfast.</i>	<i>Lunch.</i>	<i>Tea.</i>	<i>Dinner.</i>
Monday.	Bacon, eggs, fried gluten bread, butter, special jam, coffee.	Steamed sole, melted butter, custard, cheese.	Almond bread, butter, tea, cocoa-nut cake.	Beef soup, roast chicken, stewed lettuce, vanilla soufflé, sardines on toast.
Tuesday.	Baked or fried sole, etc.	Cold chicken, stewed cucumber, bread pudding.	About the same each day; make a variety in the bread if possible.	Mutton broth, steamed steak, spinach, stewed fruit, custard, savoury cheese.
Wednesday	Scrambled eggs, etc.	Mince with fried gluten bread and poached egg, junket.		Baked fish, mayonnaise sauce, stewed chicken, cabbage, milk jelly, steamed eggs.
Thursday.	Fish, etc.	Stewed sweetbread, fruit pudding.		Soup, boiled mutton, caper sauce, omelet, savoury custard on anchovy toast.
Friday.	Stewed sweetbread rolled in bacon and baked.	Hashed mutton, thickened with plasmon, steamed custard.		Fish, white sauce, stewed tripe, egg jelly, welsh rarebit.
Saturday.	Sausages, etc.	Fish soufflé, cheese, with biscuits.		Soup, roast beef, green vegetable, cup custard, savoury omelet.
Sunday.	Ham, omelet.	Baked rabbit, green vegetable, stewed fruit.		Soup, cold beef, salad, plasmon, blanchmange, and diabetic jam, mushrooms on toast.

**Bread pudding** can be made with gluten bread, or plasmon biscuits, instead of ordinary bread, and the same materials can be used to line a basin for fruit instead of a suet crust for a boiled pudding.

We must remember when preparing dishes for this kind of invalid that he is deprived of one group of the non-nitrogenous class of food, viz., carbohydrates, and the loss should be made good to the body by an increase of fats.

Cheese and eggs can be prepared in various ways, together or separately, and make many nice savouries. Sardines on fried gluten bread also make a good savoury or breakfast dish.

**Breakfast dishes.**—Eggs cooked in different ways, *e.g.*, eggs in batter (page 90), omelets, egg à Madame, etc., savoury custard, bacon, fish, mushrooms, and cheese dishes are all useful for this purpose.

**Cakes.**—These cannot be made with wheaten flour, or sugar, but almond flour, plasmon, gluten flour can be used instead of flour, and saccharin instead of sugar. Unsweetened cocoanut also makes a change.

**Coffee** and **tea** are usually allowed, but if liked sweetened, saccharin should be used instead of sugar. If the diet is a very strict one special sugar-freed milk will have to be obtained.

There are on the market special **jams** for diabetics.

If the diabetic patient is up and about, and taking his meals with the rest of the household, the dishes should whenever possible be so arranged that he can have some of what the rest are having, and special dishes for him should appear as seldom as possible.

#### COOKERY TERMS, ETC.

To **steep** is very gently to simmer a flavouring ingredient in a liquid. To **blanch** is to bring a substance up to boiling point and throw away the water it has been boiled in.

**Shortening** means any kind of fat.

**Stocks** are foundations for soups, etc., made by simmering meat, bones, vegetables, condiments, and spices together for several hours. A quart of water is used to each pound of bones and meat. Care should be taken to use it freshly made for invalid dishes.

**Croûtons** consist of bread cut in fancy shapes and fried.

**Clarified butter.**—Melt the butter in a saucepan, and pour the top part off into a basin and use.

**To clarify fat after frying.**—Pour the fat in a basin, and when cool, but not set, add about 1 teacupful of cold water, which sinks to the bottom and carries with it the impurities from the fat.

**To render down fat.**—Cut the fat in small pieces, add  $\frac{1}{4}$  pint water to each 1 lb. of fat, put in a jar in a very moderate oven for two or three hours; strain, and when cold carefully remove the fat, re-melt, and it is then ready for use.

**Measuring.**—When measuring ingredients for cookery, it is as important to be accurate as it is when giving medicines, and cooking should never be done by rule of thumb. But when scales are not at hand the following list of approximate equivalents may be useful:—

6 lumps of sugar = 1 ounce.

1 ordinary tablespoonful flour, etc. = 1 ounce.

4 leaves of French leaf gelatine = 1 ounce.

1 breakfastcup =  $\frac{1}{2}$  pint.

1 teacup = 1 gill.

2 tablespoonfuls liquid = 1 ounce.

## CHAPTER XXXVIII

### MASSAGE

BY MARGARET D. PALMER

History of Massage—Effleurage—Pétrissage and Pincement—Finger Kneading and Massage à Friction—Fulling—Tapotement—Vibrations—Exercises Defined—Uses of Massage—Things to be Remembered—General Massage—Local Massage.

#### HISTORICAL

MANIPULATIONS of the soft tissues of the body by the hand, now called massage, have been used as a remedial agent from the earliest times. Chinese manuscripts dated 3468 B.C. mention such a mode of treatment. Greeks and Romans, indeed all nations, savage and civilised, have practised it, and in many instances in conjunction with gymnastic exercises. It has received the sanction of eminent physicians and surgeons from Herodiscus and Hippocrates down to our own times.

The word massage is derived from a Greek word signifying to knead, and an Arabic word meaning to press softly. It came to us from the French, who used massage extensively two hundred years ago.

Combined with gymnastic exercises it seems never to have been lost sight of in Sweden. These exercises were warmly taken up and systematised by Peter Henry Ling, and by his efforts there was established in Stockholm in 1813 the Royal Central Institute of Gymnastics, of which he was made director.

The Swedish system comprises four branches: (1) educational, which is intended to give exercise to those in health; (2) medical, used for curative purposes; (3) military, for use in the training of soldiers; (4) æsthetic, for use in training for the stage.

The second branch has always been supplemented by massage, and it is with it we have to do. Medical gymnastics and massage are not separable; neither is complete without the other.

Dr. Mezger, of Amsterdam, confined himself more especially to massage, and through him it was brought into prominence, and placed on a scientific basis. He for many years practised and taught it with

marked success. About 1874 he successfully treated the (then) Danish Crown Prince for some joint affection.

Dr. Weir-Mitchell, of Philadelphia, U.S.A., was the first to use massage as a substitute for exercise in the treatment of neurasthenia. He initiated the treatment known by his name, which is a combination of isolation, perfect rest in bed, much feeding, massage and electricity.

In this country Dr. W. Playfair was the first to take up the "Weir-Mitchell treatment" or "rest cure." From 1860 massage became more general, not only in this country, but in many European countries, and in America. At the present time it everywhere holds a most important place in therapeutics. There are various "schools of massage," each having a special way of working. One hears of this system and that system, but the results are the same if the work is well done. All use the same movements—effleurage or stroking, pétrissage or pressure, tapotement or percussion, and vibrations, which speak for themselves.

#### THE MOVEMENTS

**Effleurage** or stroking is a superficial movement, which acts on the superficial tissues, the skin and the tissue lying directly under the skin, called superficial fascia, and on the nerves, blood vessels, and lymphatics,



Fig. 88.—EFFLEURAGE WITH FINGER-TIPS.

which ramify this fascia. Where there is tenderness or swelling, or where the part to be worked on is small, such as the fingers, the tips of the fingers are used (Fig. 88), otherwise the whole palmar surface of the hand is brought into action (Fig. 89), and should, as it were, be made to fit into the part. The strokes are made regularly and rhythmically



towards the centre of circulation, the heart, thereby promoting the flow of blood and lymph and causing absorption. In this movement the hand glides. Sometimes a beginner requires to use a lubricant—any unmedicated vegetable or animal oil may be used—till skill makes it unnecessary. If a masseuse is so unfortunate as to have damp hands there is no reason why she should not dry them with powder, but to rub powder into a patient, as is sometimes done, is undesirable, as it is

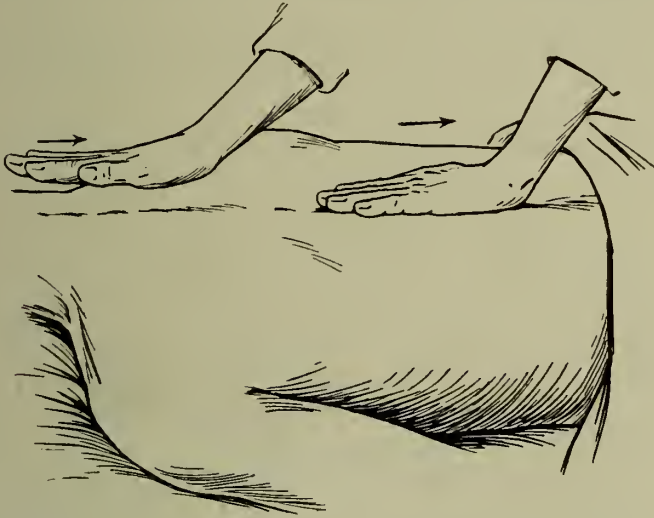


Fig. 89.—EFFLEURAGE OF SPINE WITH PALMAR SURFACE OF HAND.

likely to clog the pores, and thus frustrate one of the uses of massage, which is to improve the functions of the skin.

The stroke should reach from below one joint to beyond the joint above, or the whole length of the limb may be taken in, but the latter plan causes greater exposure, which is an objection. Pressure is made in an upward direction, the hand glides back to the starting point to begin again, without losing contact with the limb. One or both hands may be used. In cases of sprains, fractures or other injuries, it is necessary to steady the part with one hand while the other works. Effleurage is done before, after, and between deep movements. As a rule it is a rapid movement, but if the object is to soothe, the strokes will be performed more slowly. Short and jerky strokes are disagreeable to a patient, and quite useless.

With this and every other movement the masseuse must have before

her the effect she wishes to produce, and modify the movements accordingly.

**Pétrissage** or kneading (Fig. 90) is a deep movement in which the muscles and all deep tissues are acted on. A muscle or a group of muscles is seized with the hands, and being drawn from the bone is subjected to pressure, stretching and rolling. The thumbs and fingers are used, or the heel of the hand, and the fingers, or the whole palmar surface of the hands.

The hands work alternately, one immediately following the other in an even and regular manner. To avoid pinching, one part of the

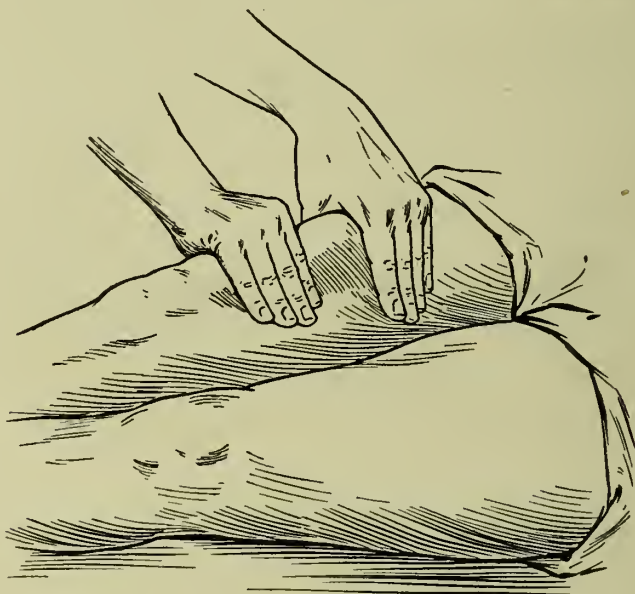


Fig. 90.—PÉTRISSAGE OF FRONT OF THIGH.

hand, say the thumb, is fixed on one side of a group of muscles, while the fingers on the other side draw out and work on the muscle against the thumb. The fingers may be fixed, and the work done by the thumbs or heel or palm of hands. The muscles are alternately grasped and relaxed; and by this intermittent pressure waste products are squeezed out of them, a fresh supply of blood furthered, and the blood vessels and lymphatics are emptied and refilled.

By deep kneading, muscle wasting is prevented, or if muscles are

wasted they are restored and strengthened by blood being brought to them, and their nutrition thus increased.

It is of the first importance when it is intended to act on muscles that they should really be taken up and thoroughly kneaded. The fingers must be trained to distinguish between muscles and the superficial tissues. These latter may in some cases be the part requiring manipulations; then muscles are not grasped, and the kneading is called superficial.

*Pincement* (Fig. 91) is an appropriate movement in such cases; the skin and immediately underlying tissue are taken between the thumbs and fingers, the latter acting as a wall, while the thumbs work alternately in a rotatory manner, squeezing and pressing the tissues against the fingers. This superficial kneading is used in obesity, œdema, etc.

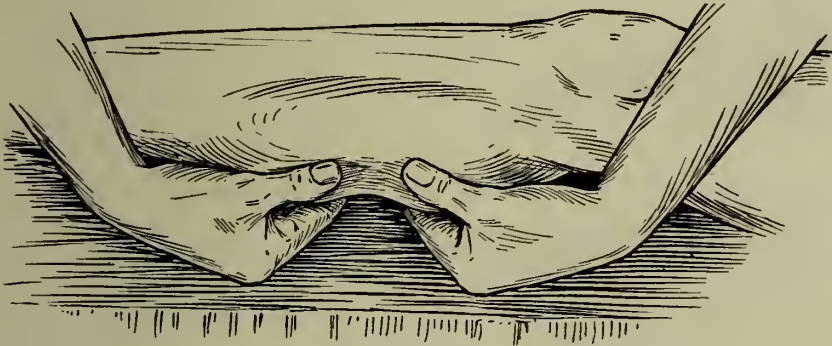


Fig. 91.—PINCEMENT OF THE LEG.

Pétrissage is a slower movement than effleurage, and should be done in the same even, rhythmical manner. An error that is frequently fallen into when deep movements have to be done is that of working from the shoulder, throwing the weight of the body on the patient. The only result of this is to fatigue the patient. Some masseuses always leave the sense of weariness; they are heavy-handed. This is a great mistake, and should be guarded against. Instead of being rubbed against the bone the muscles should be kneaded against themselves.

*Finger kneading* (Fig. 92) is a movement which partakes of the nature of pétrissage and massage à friction. In it the tissues are moved about on each other in large circles, with the fingers of one hand kept steady and straight by the tips of the fingers of the other hand being placed

on the second row of joints; the fingers move on the skin as well as moving the skin and underlying tissues. It is useful where the muscles cannot well be got at in other ways, say on a thin chest.



Fig. 92.—FINGER KNEADING OF THE CHEST.

**Massage à friction.**—In this movement (Fig. 93) small circles are described by the cushions of the thumbs or fingers being placed on any part, and the tissues under them being made to work on each other without the thumbs or fingers moving on the skin. It is used on joints where it furthers absorption; on matted tissues where it breaks down adhesions; and also on the head when it is desired to move the scalp on the skull. By it deeply seated muscles, such as the long muscles of the spine, may be reached. On a large surface—the abdomen or the back—the whole palm works. It is a grinding

sort of movement, and should be done carefully, and immediately followed by effleurage.

**Fulling** (Fig. 94) was so called by Ling from the way fullers scoured cloth. It partakes of the nature of effleurage or pétrissage, according to whether light or heavy pressure is used. One hand is placed *under* a limb, the other *on* the limb, directly over the first hand, the palms facing each other. A movement is made very much as one does in warming the hands by rubbing the palms together, this is done several times in one place, then the hands are advanced a little and the movement repeated, and so on, along the limb. It may be done merely on the skin or the muscles may be carried to and fro with the hands. It is a brisk movement.

**Tapotement.**—All percussion movements come under this head. They are light, sharp, elastic movements, done entirely from the wrist.



(hence the elasticity). They are done in various ways: (1) with the palmar surface of the fingers held straight and close together; (2) with the dorsal surface of the fingers semi-flexed and held loosely and apart; (3) with the tips of the fingers brought close together, forming a little ball; (4) with the ulnar border of the closed hand; (5) with the ulnar border of the open hands, striking alternately; (6) with the palmar

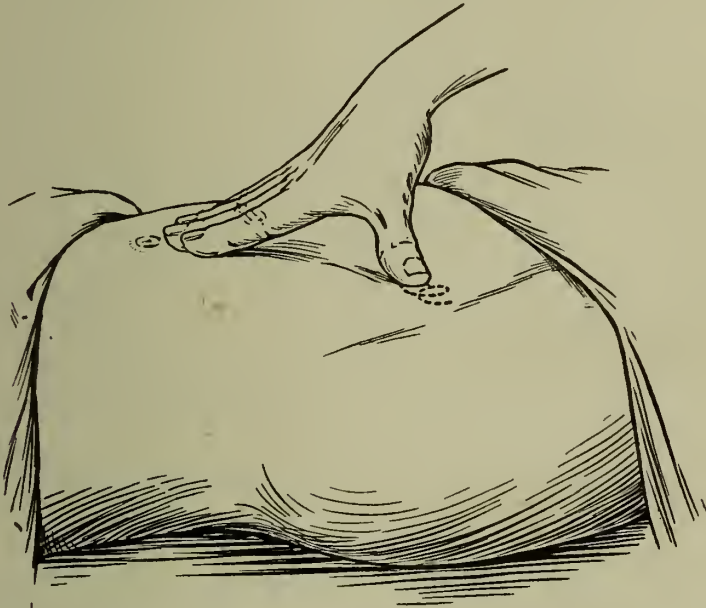


Fig. 93.—MASSAGE & FRICTION OF THE ABDOMEN.

surface of the hands held boat-shaped, striking alternately (Fig. 95). They cause muscular contraction and stimulate nerves and circulation.

**Vibrations** consist of vibratory or trembling movements communicated to the patient by the hand of the masseuse. The thumbs, fingers, palms or knuckles are placed on a nerve or over internal organs, and a rapid, trembling movement made. The vibrations stimulate nerves and circulation, and reach deeply seated parts.

**Definition of exercises.**—A *passive* exercise is one which is made by the masseuse, the patient being passive. An *active* exercise is performed by the patient without assistance or resistance from the masseuse.

A *resistive* exercise is when an active movement on the part of the



patient is resisted by the masseuse or *vice versâ*; these are much stronger and more effectual than the foregoing, the will of the patient being brought

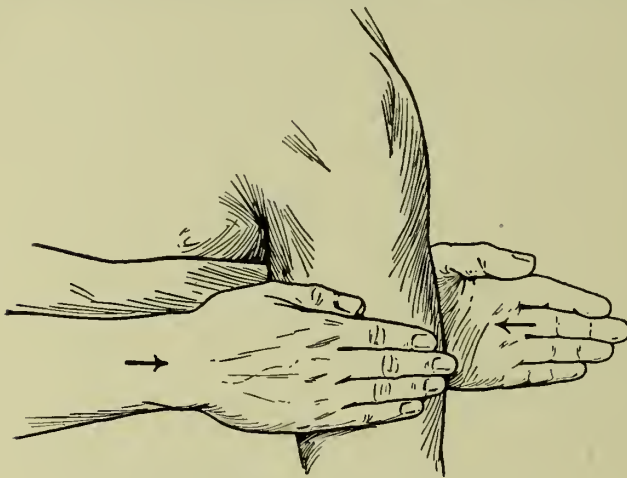


Fig. 94.—FULLING OF MUSCLES OF ARM.

into action. The resistance must be kept within the patient's strength. It is often advisable to *begin* with passive movement. *Assistive* exercises are when the patient can only partly perform a movement and the masseuse completes it.

#### Uses of Massage.

—It will be seen from the foregoing

that massage has very varied uses. It accelerates the circulation, thereby causing an increased flow of blood to all the tissues, by which they are nourished and strengthened. Absorption of superfluous fluid is promoted, congestion is relieved, adhesions of soft parts are broken down, nerves are soothed and stimulated, and pain is allayed. It should be needless to add that a treatment which is capable of influencing every tissue of the body and is used in so many diseased conditions should never be undertaken except under the direction and supervision of a medical man. It is equally important that the masseuse should be fully trained by a competent teacher, and the training must include a knowledge of the different tissues of the body, the position of internal organs, the position and action of



Fig. 95.—TAPOTEMENT OF THIGH WITH PALMAR SURFACE OF HAND HELD BOAT-SHAPED.

muscles, the distribution of principal nerves, and the circulation of blood and lymph. (See the chapters on Anatomy and Physiology in Vols. I. and II.).

#### THINGS TO BE REMEMBERED

On the limbs pressure is made in an upward direction.

From the head the pressure is downwards. Almost all movements are made from the wrists.

In all movements, especially tapotement, bone is to be avoided.

The muscles of the part being worked on must be relaxed, and the patient may require to be frequently reminded of this.

In thin subjects care should be taken not to hurt by too firm pressure. Muscular persons can bear, and require, firmer pressure.

No part of the body but that which is being worked should be uncovered.

The patient must not only be covered, but kept warm.

The masseuse stands or sits at a comfortable distance from the patient, not too near or there will not be freedom of arms, not too far away as that involves a stretching of the arms or a bending of the body, neither of which tends to good work. Whatever bending is necessary should be from the hips, not of the shoulders and head.

Movements should follow each other so closely that no part escapes manipulation, nor should there be any break: the hands should glide from one movement to another without being lifted from the skin.

#### GENERAL MASSAGE

In *general* massage all the body is included except the head. It is given in cases of anæmia, obesity, neurasthenia, insomnia, chorea, general debility, and bad circulation.

An hour and a half or two hours must elapse after a full meal before the massage is commenced. The patient is in bed, having on a night-gown, dressing-gown or other suitable garment, and covered with necessary bed-clothes. The temperature of the room is what the patient is accustomed to, probably about 70°, but certainly not below 65°. Only the part of the body being worked on is uncovered.

Uncover the **foot** and after a preliminary stroking stroke firmly each toe separately, knead the sole with the palm and effleurage briskly every aspect, pass the hands up and knead the ankle joint with the heel of the hand. With one or both hands stroke the **leg** from ankle to knee

on all aspects. Knead all the muscles, being careful to get at the deep muscles of the calf. Follow with fulling and tapotement, and finish with a few soothing strokes. In all movements avoid the crest of the tibia.

Cover the leg and knead the **knee-joint** with the heel of the hand at the sides, and above and below the patella. The fingers can be more easily used underneath in the popliteal space. Then include all aspects in effleurage. Commence the **thigh**, like the leg, with stroking; let no part be omitted. It must then be extremely well kneaded because of the masses of muscles. Put the hands well under so as to get at the muscles at the back. Do fulling vigorously, first with hands above and below the limb, and then at each side. Follow with fairly firm tapotement in every direction. Finish as before with stroking.

The **hip-joint** is kneaded in the same way as the other joints. Now draw the clothes over the limb, steady the foot with one hand, take the toes together in the other, flex, extend, and circumduct them—flex, extend, and circumduct the ankle-joint. Flex and extend the knee, flex, extend, and circumduct the hip.

Repeat these movements to the other limb. Arrange the clothes comfortably, and proceed to the **upper limbs**. The hand is treated as the foot. The wrist is kneaded the same way as the ankle. The forearm is stroked and kneaded, the elbow is kneaded on every aspect. The arm has the same movements as the thigh, done with less vigour; and the kneading is carried up well over the shoulder joint. Now fulling is done from wrist to shoulder, also percussion, and the final effleurage. The joint exercises are the same as those of the lower limb.

Attention is next turned to the **front of the trunk**. Stroke the neck downwards and knead in circles with finger ends at each side and in front. Stroke from the shoulders forward, down the sternum, under the breast, and come back in the same way; if there is any pressure let it be from sternum to shoulders. Do finger kneading all over the chest, working into the folds of the axilla. Light percussion and stroking. It is not necessary to mass the breasts in general massage. The chest is now covered up.

Raise the head and shoulders with another pillow, draw the knees up and, if necessary, support them by placing a pillow under the thighs. This position is to relax the muscles of the abdomen. Do friction over the region of the liver firmly and with vigour. Draw the hands one

after the other rapidly from the right side to the middle of the body. Apply friction over the region of the stomach; draw the hands up in the same way, but from the left side. Tapotement over both organs; vibration with flat hand. Give deep breathing exercises here.

Knead the walls of the abdomen with thumbs and fingers: this is especially necessary if they are loose and 'flabby'. The next work is over the small intestines. Knead with fingers or heel of hand in circles round the umbilicus. Then commence at the cæcum and, kneading in the same way, work up the ascending colon; when the ribs are reached turn and work across the transverse colon (if you are at the right side the pressure will be from you), turn again and work on the descending colon. Pressure is now in a downward direction. Having arrived at the superior iliac spine, turn the hand inwards and work to the middle line. Follow with tapotement along the course of the colon, also vibrations.

To mass the **back** turn the patient face downwards, place a pillow under the stomach to relax the muscles of the back. (If this position is very disagreeable to a patient, or if for some reason she is unable to take it, she may lie on her side.) Place the hands under the forehead or down by the sides. From the neck to the waist is a convenient area to work on; no further need be uncovered. Effleurage briskly from neck down on the spine. Knead outwards from the middle line on each side in the direction of the muscle fibre as on the chest. The whole surface of the back and sides is gone over. Percussion follows, and then vibration with thumbs or knuckles on the muscles at each side of the spine, then stroking all over the back.

Cover this part; uncover the lower part. There is now a mass of muscle, forming the buttocks, generally well covered with fat. The work here must be firm. Effleurage the sacrum, knead the buttocks in every way, taking up as much as possible in the hands each time. Tapotement and stroking follow. This finishes general massage. Turn the patient, arrange the bed-clothes and leave her comfortable.

The whole process should be pleasant. An hour is the time usually allowed, and the time must be suitably divided. Give twenty-five minutes to the lower limbs, fifteen to the arms, ten to the front of the trunk, and ten to the back. A drink of milk or beef-tea may be necessary



or desired. Although the head is not touched the brain is benefited by the improved circulation.

During the menses, massage of the lower part of the back and of the abdomen is omitted.

In the **rest cure** or **Weir-Mitchell treatment** general massage is given in lieu of exercise which the patient is deprived of by being kept in bed. In these cases an hour and a quarter or an hour and a half twice daily is ordered. Begin with twenty minutes, increase ten minutes each visit till the maximum is reached. The treatment lasts from one to three months. If the patient suffers from insomnia give the evening massage about half-past eight or nine o'clock. After an hour's massage over the whole body, give the patient a drink, and make her comfortable for the night. Make any necessary arrangements about the room, such as opening a window, mending the fire, if there is one, and lowering the lights. Then finish the massage by soothing movements on the spine over the night-dress, and on the head.

#### LOCAL MASSAGE

Local massage is given in cases of constipation, spinal curvature, sciatica, asthma, wry neck, indigestion, sprain, fracture, dislocation, laryngitis, etc., etc.

**Constipation.**—The patient lies on her back with shoulders raised and knees drawn up. Have a small shawl to put over the chest, turn back the bed-clothes, uncover only the part to be worked on. Cause the patient to take a few deep breaths. Bile is a natural purgative, and to further a flow of this secretion commence on the liver. To the movements already described in massage of the abdomen, add firm kneading with the heel of the hand over the regions of the liver and stomach; make pressure movements with the thumbs on lower border of liver and gall-bladder, following the curve of the right ribs. Do more and deeper work on the colon. If it be loaded begin at the sigmoid flexure and work backwards to the cæcum; be careful to make pressure in the proper direction, that is from right to left, although your hand is moving from left to right. The kneading may be done with the heel of hand, the fingers or the ulnar border. The work must be slow and careful; do not move the hands on the skin, but carry the walls with the hand. Work as deeply on the internal structures as the patient can comfortably bear. Do superficial and deep kneading on the abdominal



walls with thumbs and fingers. Tapping round the colon is very stimulating, so are vibrations; do them with the flat hand over intestines, liver and stomach.

After twenty minutes' manipulation exercises may be given. Lower the shoulders, cause the patient to flex, extend, abduct and adduct the thighs while you give resistance to each movement. In flexion resistance is given by placing the hand above the knee on the femur, in extension under the knee, or on the ankle or sole of foot. In abduction the resistance is given on the outside of the lower end of femur, in adduction on the inside.

Hold the ankles while the patient raises herself to a sitting posture without using her arms. She then turns on her chest that the sacrum and buttocks may be kneaded and percussed. When out of bed add to the exercises forward bending of the trunk till the fingers touch the toes. Rotation of the trunk to the right and to the left. Massage of the abdomen and the lower part of the back will occupy half an hour, fifteen minutes may be given to exercises, which must not be done hurriedly. There must be deep breathing after each exercise. See that the bladder is emptied before giving abdominal massage.

In **chronic diarrhœa** the movements used on the abdomen are the same as in constipation, but made less deeply, as it is not pressure that is required, but movements that will cause absorption and increase local blood circulation in order to nourish the intestines. To combat the weakness induced by the disease and to restore tone to the muscles general massage is added to abdominal massage.

**Indigestion.**—As a rule an hour and a half or two hours should elapse after a full meal before massage of the abdomen is given, but when the food is retained too long in the stomach, and the patient suffers from distension and pain, the interval may be reduced to half an hour; the usual movements are given combined with deep breathing. This will increase the secretion of digestive fluids, promote absorption, and shorten the time the food is retained.

By **abdominal massage** activity of the kidneys is promoted, and the secretion of urine is increased.

**Spinal curvatures.**—The curve most frequently met with is **lateral**, in which the spine bends to one side or other, or, in the case of a double curve, to both sides. The first curve, called *primary*, may be in the upper or lower part of the spine, the one below or above it is called the

*secondary or compensatory curve.* Early treatment will prevent the formation of the second curve. Sometimes instead of one or two short curves there is one long curve. A single curve, whether long or short, is called a *C curve*, a double curve is an *S* or *sigmoid curve*.

Place the patient face downwards with a pillow under the stomach, make the posture as nearly natural as possible, that is, place the arm of the high shoulder by the side and raise the arm of the low shoulder to the head; this brings the body into as straight a position as possible. Use the movements given for the back in general massage, but modify them to suit the altered conditions and give more special work to the long muscles of the spine. In kneading the convexity with one hand, make pressure on the bones as you work, while you support the ribs on the concavity with the other hand. When kneading the concavity make no pressure on the ribs, otherwise you run the risk of increasing the deformity, or even of causing rotation of the vertebræ if it does not already exist. The heel of the hand is suitable for kneading the convexity, and the movement is made outwards from the spinal column. Kneading with the fingers is suitable on the concavity, and the movement is made towards the spine. When there is rotation the ribs are bulged out on the convex side, and the processes are turned to the concavity.

When all the back, including the buttocks and hips, has been thoroughly massed, turn the patient and give such exercises as tend to correct the deformity. There are many, such as elevation and circumduction of the low shoulder, circumduction of the low hip, abduction of both arms simultaneously to expand the chest. Do this several times with deep breathing.

The next thing is to mass the chest, observing the same rule as to inequalities as on the back.

*Exercise.*—The patient, lying prone, raises the head and shoulders while the ankles are held.

This exercise is made stronger by the patient bending over the end of a couch or table, from the hips, and rising to the horizontal or beyond it. Let there be inspiration while rising, expiration while lowering the trunk again.

The patient rests for half an hour after treatment. It is of the utmost importance that these patients should not be fatigued by too strong or too long-continued exercises.

In **posterior curvature** the spine is bent backwards, the shoulders fall forwards and the chest is sunken. All the manipulations for the back are useful, and all exercises which tend to expand the chest contract the muscles of the back (which are stretched) and stretch the muscles of the abdomen (which are contracted). The work is the same on both sides of the back and chest. Among the exercises will be raising the head and shoulders backward while lying prone; circumduction backwards of the arms, in the same position; sitting or standing, abduction and extension backwards of the arms to force the vertebral borders of the scapulæ towards each other; backward bending of the trunk with the arms crossed behind. Deep breathing should be practised with all these movements.

In **anterior curvature** the spine is bent forwards in the lower dorsal and lumbar regions. Use all the movements that are possible in the very awkward shape of the back. The best position for the patient is to sit leaning forward, resting the arms on a table or side of the bed. Lying down, the chest and abdominal walls are kneaded and stroked, the abdominal muscles are stretched, also the flexors of the thigh. *Exercises* are—forward bending of the trunk; rising to sitting posture without the aid of arms, when lying on the back; raising the legs to a right angle with the body while the knees are straight.

**Flat foot.**—The patient lies on a couch with legs extended. Being seated at one side in a suitable position so that the work may be easily done, take the foot between the two hands and begin with the toes. Friction and stroke each toe separately, then flex and extend each joint, add circumduction to the first joint, making traction at the same time. Knead the top and sole of the foot. Do friction all over the tarsal bones, and round the ankle joint; go over the same region with the heel of hand firmly kneading. Next flex, extend, abduct, adduct, invert and circumduct outwards. Give vibrations to each toe by taking it between the thumb and index finger, and making a trembling movement. Take the foot between the two hands, thumbs on top and fingers on the sole, and make the same movement. The leg is then massed from ankle to knee. Each group of muscles is taken up and kneaded with thumbs and fingers, then they are all taken with both hands and kneaded with the palms. Fulling follows, then squeezing of the calf. Briskly tapote and finish with stroking.

*Exercises.*—The patient stands with hands on hips, rises to tip toe,

remains two or three seconds and slowly brings the heels to the ground. This is repeated according to the strength of the patient. Also standing on outer borders of feet with toes turned in. There should be half an hour's rest after each treatment, not necessarily lying down. Sitting tailor fashion with knees abducted and feet crossed, the outer borders in contact with the couch, is a good position ; it rests the feet and throws up the arch.

**Professional cramp.**—Mass the whole limb from the finger tips, include every muscle concerned in the movements of the arm, search out any that may be wasted that they may have extra work, stretch those that may be contracted. Stroke the upper part of the spine, and knead the muscles at each side of it. Give tapotement on the stretched muscles. Vibrations are useful ; they may be applied to each finger and to the hand after the manner described for the toes and foot (p. 117).

In exercising the limb use movements the reverse of those which have brought on the trouble. For instance, in writing the arm is close to the side, the forearm is semi-flexed, the fingers are held close together ; therefore extend, abduct and circumduct the whole limb. Extend, circumduct and abduct the fingers ; see that every joint is well stretched. These movements are passive at first, and resistive when returning strength permits. In the case of pianists the habitual position of the arms and fingers is quite different, the movements being larger. The symptoms, too, are different ; the flexors and extensors are both affected, and the fingers and forearm swell. The muscles of the shoulder should have special attention, otherwise the work is the same as described above.

As in all complaints caused by over-use of muscles, the affected limbs should have rest.

**Wry neck.**—All the muscles of the neck and the upper part of the spine are included in the work, but special attention is paid to the sternocleidomastoid and upper and outer border of the trapezius. Effleurage and pétrissage are used ; on the stretched muscles add tapotement, on the contracted muscles add friction and stretching movements.

*Exercises.*—Take the head between the two hands and bend it as far as possible to the stretched side so as to draw out the contracted muscles on the other side. This is a painful process ; the shoulders are held by an assistant. Still holding the head, turn the face (which is turned



upwards and away from the contracted side) so that the chin comes to the middle line. These movements cannot be completed at first.

**Sciatica.**—Besides the usual movements for the lower limb, deep pressure movements are done on the sciatic nerve and its continuations, also tapotement and vibrations. The buttocks and sacrum must have particular attention. The nerve is easily got at in its entire length if the patient lies face downwards, or on her side, but it may be impossible from the severity of the pain to move her from whatever position she happens to be in. Soothing circular movements with ends of fingers over the nerve and long slow strokes give relief. To stretch the nerve, flex the thigh strongly on the abdomen, draw out the heel when the leg is extended, and press the foot back towards the leg. Abduct the leg.

**Synovitis of knee.**—As in other joints the swollen and inflamed parts are not touched. To relieve tension, stroke the thigh above the swollen part for about five minutes to empty the vessels, that they may carry off the superfluous fluid. There is great pain, owing to the stretching of the tissues, and the pressure of the fluid on the sensory nerves. The swelling is great because of the large synovial membrane and many bursæ. When the joint may be manipulated the movements are at first superficial, friction is given all round the patella, also stroking with thumbs and palms. If there is a back splint it is not moved for a day or two, therefore the under part of the knee cannot be got at. Do not move the knee at all at first, but as soon as possible give slight and gentle flexion and extension. Continue to effleurage the thigh at intervals, add kneading as soon as it can be borne, to keep the muscles in condition. Squeezing favours absorption; grasp the limb above and below the patella, press with both hands several times, then draw the hands towards each other; if evenly and gently done this movement will not hurt. When the back splint is removed put a pillow under the knee to support it. When the inflammation is reduced do friction and kneading in the ordinary way, and as time goes on fully flex and extend the joint.

**Varicose veins.**—In giving massage of a limb in which there are varicose veins, carefully avoid them. They will be relieved by the improved circulation in the other veins. The limb should be on an inclined plane.

**Thrombosis.**—In working to relieve the œdema of the limb which is the seat of thrombosis, be careful to make the manipulations with the utmost evenness. A jerk might be fatal by dislodging a clot.



**Recent fracture.**—Much care is needed in the removing and replacing of splints and bandages that the bones may not be moved at the seat of fracture. The only movement permissible at first is gentle effleurage with the flat hand. Be careful to pass over the fracture without touching it. Pressure is gradually increased and after some days kneading is added. Joints in the neighbourhood should receive attention from the first. In the case of an arm, move the finger joints, and of the leg the joints of the toes. Muscles of the uninjured part of the limb must be manipulated to keep up nutrition and prevent wasting.

The leaving off of splints must be subject to the doctor's decision. In moving the joints above and below the injury, give firm support to the fracture, and always support the limb with one hand while you work with the other.

Colles' fracture, caused by a fall on the extended hand, so that the lower end of the radius is broken, and Pott's fracture, in which the lower end of the fibula is broken and the foot is dislocated outwards, are treated as you would a bad sprain. Early massage is given to lessen muscular spasm, to allay pain, to cause absorption of blood that has been poured out, and to prevent matting of soft tissues and muscle-wasting.

**Sprains.**—Manipulations may be commenced on the limb above the injured joint immediately after the accident. When the inflammation is reduced the tender part is gradually approached. Slight extension and flexion of the joint from the first prevent adhesions from forming, and subsequent stiffness. Effusion of synovia and blood causes the tendons to become adherent to their sheaths. Effleurage promotes absorption and removal of effusion. Treatment is given twice a day. Care must be taken not to hurt the patient.

**Dislocations** require the same careful handling and the same class of work as recent fractures and sprains. Especially must discretion be used in the early exercises.

**Stiff joints.**—Should a patient who has had any of the above accidents not come under massage treatment for weeks or months, you will find adhesions formed, muscles wasted, and joints stiff. Manipulations are now commenced directly on the joint, as there is no inflammation. Use friction, get the cushions of thumbs and fingers into spaces between bones or tendons. By friction adhesions are broken down. Follow this with stroking and kneading all over the joint. Next all muscles connected with the joint must have very thorough work; they are weak

and wasted from want of use. Kneading will restore and strengthen them. If any are contracted, they must be stretched. Passive movements will cause pain, but if the joint is to become movable and useful they must be persevered with; at the same time they must be proceeded with carefully and gradually, that no unnecessary pain be inflicted. It is a good plan for the patient, unassisted, to move the joint as far as possible, and then for the masseuse to extend the movement a little further. The patient should be warned that there will be pain.

The structure of every joint should be studied and the exercises most carefully practised. There is nothing more important in the work than the manner in which these exercises are performed.

**Laryngitis.**—Place the thumb and index finger well up under the jaw on the sides of the larynx, which is kneaded between them. Do friction down each side and stroking. Vibrations are given with fingers in the same position. Vibrations and shakings are perhaps the most useful proceedings in this complaint. There should be deep breathing.

**Asthma.**—Massage of the chest and back, the usual movements. Much relief is felt after tapotement. Vibrations also are beneficial.

**Lumbago.**—Stroke, knead and percuss all the lumbar and sacral region. The work must be firm and vigorous.

**Neuralgia.**—This trouble requires deep friction over the seat of pain, pressure on the affected nerve, thus producing numbness; then tapotement, and finally, soothing strokes.

## CHAPTER XXXIX

### THE NAUHEIM OR SCHOTT TREATMENT

BY MARGARET D. PALMER

Passive and Resistive Exercises—General Rules—Exercises of the Upper Limb—  
Of the Lower Limb—Of the Trunk—Administration of Baths.

IN this treatment, used chiefly for heart disease, effervescing saline baths are combined with resistive exercises. It is frequently used in conjunction with massage. It should never be undertaken except by the direction and under the supervision of a medical man.

It is expedient sometimes to commence the treatment with *passive* exercises which relieve the heart. *Resistive* exercises quicken the circulation in the muscles brought into action, and reflexly induce contraction of the cardiac muscles. Their use is to cause slight exertion without fatigue, and to increase peripheral circulation. They cause dilatation of the capillaries in the muscles, and thus relieve the heart, and the pulse becomes slower and fuller. The resistance is graduated, being at first not more than the weight of the hand of the operator. At first only the exercises for the upper limb are used, afterwards those of the lower limb and trunk are added. A pause of a minute or a minute and a half occurs between each movement.

The exercises have been derived from the Swedish system, but were systematised by two brothers, Doctors Theodor and August Schott, of Nauheim, Germany, where are the natural baths which are taken in conjunction with the exercises. The exercises and baths may be employed separately or conjointly. The former are so arranged that every muscle in the body is in turn brought into use, while no muscle is over-worked, as no movement is given twice in succession on the same limb, and rest of a minute or so is allowed between each movement. They are not given for the development of muscle, but to act on the circulation. Dr. W. Bezly Thorne, in his book "The Schott Method of Treatment in Chronic Diseases of the Heart," gives the following rules, which should be closely adhered to :—

"1. Each movement is to be performed slowly and evenly, that is, at an uniform rate.

"2. No movement is to be repeated twice in succession in the same limb or group of muscles.

"3. Each single or combined movement is to be followed by an interval of rest.

"4. The movements are not to be allowed to accelerate the patient's breathing, and the operator must watch the face of the patient for the slightest indications of: (a) dilatation of the *alæ nasi*; (b) drawing of the corners of the mouth; (c) duskiess or pallor of the cheeks and lips; (d) yawning; (e) sweating; and (f) palpitation.

"5. The appearance of either of the above signs of distress should be the signal for immediately interrupting the movement in process of execution, and for either supporting the limb which is being moved or allowing it to subside into a state of rest.

"6. The patient must be directed to breathe regularly and uninterruptedly, and should he find any difficulty in doing so, or for any reason show a tendency to hold his breath, he must be instructed to continue counting in a whisper during the progress of each movement.

"7. No limb or portion of the body of the patient is to be so constricted as to compress the vessels and check the flow of blood."

The patient may stand, sit, or be in a reclining position. Sometimes the patient is confined to bed, then there can be no question as to standing or sitting, otherwise the position is suited to the condition. One or two movements have to be omitted or less fully performed in the sitting or reclining posture. Resistance is given in both directions.

#### EXERCISES OF THE UPPER LIMB

No. 1.—The operator faces the patient. The arms are stretched forward on a level with the shoulders, palms meeting in front; they are taken out sideways on the same level. In this movement resistance is given on the back of the wrist with the fingers which point upwards. The arms are then brought back to the original position. Resistance is now on the front of the wrist.

No. 2.—This is a single movement, the arms being exercised one after the other. The operator stands at the side; the arm hangs by the side, palm forward; the forearm is flexed, with resistance on the

front of the wrist, and is then extended, with resistance on the back of the wrist.

No. 3.—The operator faces the patient, and the arms in same position as in No. 2. They are carried outward and upwards till the thumbs meet over the head; resistance on the radial border; they are returned in the same way to the first position; resistance on the ulnar border.

No. 4.—The second phalanx of the fingers and the ends of the thumbs are placed in contact at the lower part of the abdomen; they are raised till above the head; resistance on the radius. In the return movement the palmar surface of the fingers is placed under the ulna and there is resistance in that position.

No. 5.—The arms hang by the sides palms inwards, they are stretched forwards on a level with the shoulders, then upwards till they are at the sides of the head; they are then returned in the reverse order, first downwards, then backwards, the width of the shoulders always between them. Resistance on the radius in the outward and upward movement; on the ulna in the downward and on the inner border of hand in the backward movement.

No. 6.—The same as No. 1, but with hands clenched.

No. 7.—The same as No. 2, but the hands are clenched, and the front of the forearm is turned out. A single movement with operator at the side.

No. 8.—Also a single movement, the palms inward, the operator at the side and on a line with the shoulder. Circumduction. Resistance on the radius as the arm moves forwards and upwards. When it is at the side of the head, the palm is turned outwards and resistance is made on the ulna as it moves backwards and inwards to where it started from.

No. 9.—Arms by the sides, palms inwards. They are moved backwards and upwards as far as possible; resistance on the ulna. They return to the sides; resistance on the radius.

No. 10.—Single movement rotation from the shoulder-joint. Resistance is made both inwards and outwards by holding the ulnar border of the hand. Right hand to left, left to right. The arm is abducted.

No. 11.—Flexion of hand, resistance on the palm. Extension, resistance on the back of the hand.

In bad cases the arms should not be raised to the head, as syncope might result from backward rush of blood. Therefore without explicit



direction it is better not to use movements that take the arms above the level of the shoulders.

#### EXERCISES OF THE LOWER LIMB

If the patient stands, support is necessary; one hand should rest on the back of a chair or on a table. The movements are all single.

No. 1.—The thigh is flexed on the trunk, resistance above the knee. It is extended; resistance, under the lower part of thigh or on sole of foot.

No. 2.—The whole limb is fully extended forward; resistance with hand on front of ankle. Then it is fully extended backwards, when the resistance is changed to back of ankle and again on the front when the limb is brought to its original position.

No. 3.—The leg is flexed on the thigh; resistance on the heel. In the return, resistance above the instep.

No. 4.—The whole limb is abducted; resistance on the outer side of ankle. It is adducted with resistance on the inner side of ankle.

No. 5.—Flexion of foot; resistance on the dorsal aspect. Extension; resistance on the plantar aspect.

#### EXERCISES OF THE TRUNK

No. 1.—The operator stands at the side. Forward bending resisted by hand on upper part of sternum; the other hand gives support at the lower part of the back. In rising to the upright position, resistance is made by the hand between the shoulders. The knees must be kept straight.

No. 2.—Lateral bending as far as possible to one side, then to the other, and lastly the upright position is regained. The operator stands in front, with one hand under the arm of the side to which the body is bent. The other hand gives support on the hip of the other side. In bending to the opposite side the hands are reversed. Resistance is made in each case with the hand which is under the patient's arm.

No. 3.—The feet being both kept firmly to the ground the trunk is rotated as far as possible to the left, then to the right, then to the first position. Resistance is made with one hand in front of the advancing shoulder, the other hand on the back of the receding shoulder, both hands resisting at the same time.

The number of movements given at one time, and the length of

time to continue them, must be left to the medical man. The pulse must be taken before, after, and once during the exercises, and a record kept. The rest between the exercises may be utilised by deep inspirations.

#### ADMINISTRATION OF BATHS

These baths are to be had in perfection at Nauheim, where they are prepared with the natural waters direct from the springs. Dr. Theodor Schott, who still carries on the treatment at Nauheim, says that the same effects may be derived from baths artificially prepared to resemble the natural waters.

A course of eighteen or twenty-one baths is taken, generally in sets of three, with a day's rest between each set. On this day the exercises are taken instead of the bath. Sometimes only two are taken between the days of rest, and sometimes four. At other times the baths and exercises are on alternate days. These details are decided by the medical man.

The number of baths in one course does not exceed thirty. As a rule the course lasts six weeks.

The temperature of the bath is generally  $98^{\circ}$  in winter, and  $95^{\circ}$  in summer, but it is taken as low as  $92^{\circ}$ .

The patient reclines in the bath, covered with water to the neck. The first bath should not exceed five minutes; each succeeding bath the time is increased one minute, up to fifteen or twenty minutes.

Two hours must elapse after the last meal before a bath is taken. On coming out of the bath the patient is wrapped in a warmed sheet and dried by the nurse while seated. This is followed by an hour's rest in bed, the bed to be previously warmed, and hot bottles placed in it.

A bath should not be taken when the patient is tired. The pulse has to be counted before, after, and during the bath, and recorded.

During the bath the body is covered with minute globules of gas; it is these that stimulate the skin, causing a prickly sensation.

The baths affect the capillary circulation and the pulse in the same way as the exercises, but in greater degree. The fall in the pulse-rate is more pronounced, and so too is the increase in volume. Added to this is the irritation of the nerve endings in the skin by the gaseous constituents of the water. According to Dr. Groedel,\* the effects

\* "Baths and Gymnastics in Arteriosclerosis."

of the baths are produced by the action of the irritants in the water on the nerve endings in the skin. This irritation is conveyed from the terminals to the nerve centres, and thus the whole system is affected.

The ingredients for an artificial bath are—

10 pounds chloride of sodium.

10 ounces chloride of calcium.

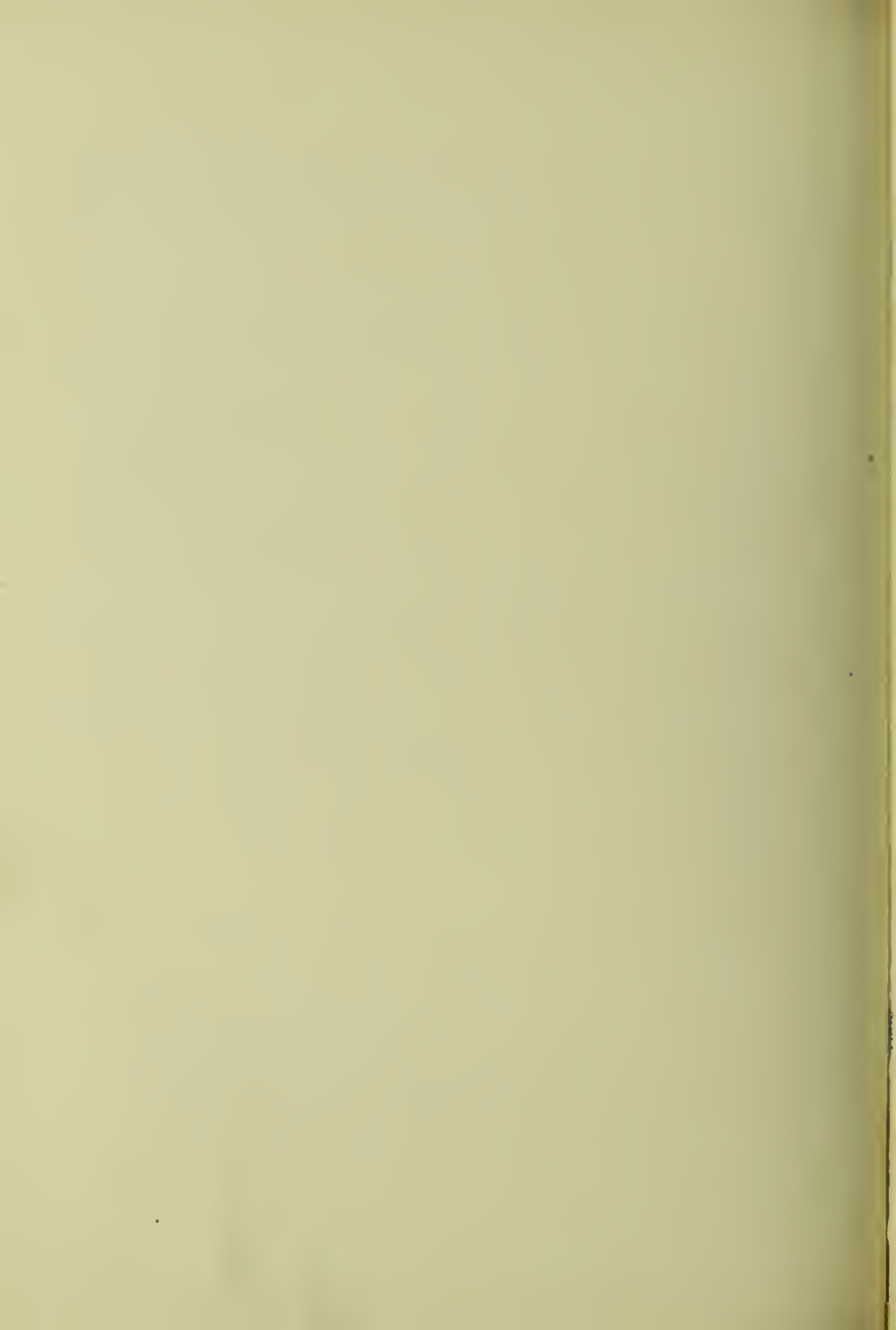
To cause effervescence add—

1½ pound bicarbonate of soda.

2½ pounds hydrochloric acid.

The chloride of calcium is dissolved in a pint of water before being added to the sodium. To add the acid, place the neck of the bottle under the water before drawing the stopper. In a few minutes effervescence will begin, and will last from twenty to thirty minutes. This is a full bath. One third or one half of these quantities is sufficient for each of the first three baths. Or they may be taken without the addition of the soda and acid. Forty to fifty gallons of water in each case.

The simplest way of preparing the bath is to use Dr. Ernest Sandows' combination. The ingredients are made up in powder and tablets packed in small boxes, each box containing sufficient for a full bath. Mix well the contents of the little bags in above quantity of water; add the eight tablets—four at each side of the bath—when the evolution of carbonic acid gas immediately takes place and lasts about half an hour. Half the quantity to be used for the first baths.



## BOOK IV.—MIDWIFERY

BY MARY E. ROCKE, M.D., L.R.C.P., L.R.C.S.Ed., AND  
ALICE GREGORY

### CHAPTER XL

#### THE PELVIS—THE ORGANS OF GENERATION—THE OVUM

The Pelvis—Pelvic Measurements. The Vulva—Muscles of the Pelvis. The Peritoneum—Ovaries and Ova—The Uterus—Uterine Blood Vessels. Development of the Ovum—Development of the Chorion—The Placenta—The Umbilical Cord—The Fœtus—The Fœtal Skull and its Measurements—Rate of Growth of the Ovum.

#### I.—THE PELVIS

**The pelvis.**—The pelvis is the bony canal through which the child must travel on its passage into the world. A child of normal dimensions can pass easily, but with no room to spare, through a pelvis of normal dimensions. It is, therefore, of the first importance to a midwife to know and understand perfectly the shape and measurements of the normal pelvis.

The walls of the basin are not made entirely of bone, but are filled in at various points with different soft structures. Were this not so, the pelvis would be unnecessarily heavy, and the pressure on the child's head would be very injurious, and might cause its death.

**Back of the pelvis.**—The various bones entering into the formation (Fig. 96) are, at the back, the *sacrum* and *coccyx* (the two lower segments of the vertebral column, the former consisting of 5, the latter of 4 vertebræ, welded together). The sacrum is deeply curved, thus forming what is known as the hollow of the sacrum; the projection above the hollow is called the sacral promontory.

**Sides of the pelvis.**—At the sides the two *innominate bones*, which in childhood are each made up of three separate bones—the ilium, the ischium, and the pubes. In later life these three are joined into one—the os innominatum. The ilium forms the upper part of the bone, and



extends above the true pelvis in a wing-like projection. The upper edge of the ilium is known as the iliac crest, the anterior end of which is called the anterior superior spine of the ilium. The prominence at the back of the ilium is the posterior spine.

The boundary of the true pelvis (*see* Frontispiece) is marked by a ridge of bone, the ilio-pectineal line, on which a slight eminence occurs, the ilio-pectineal eminence. The ilio-pectineal lines, uniting with the

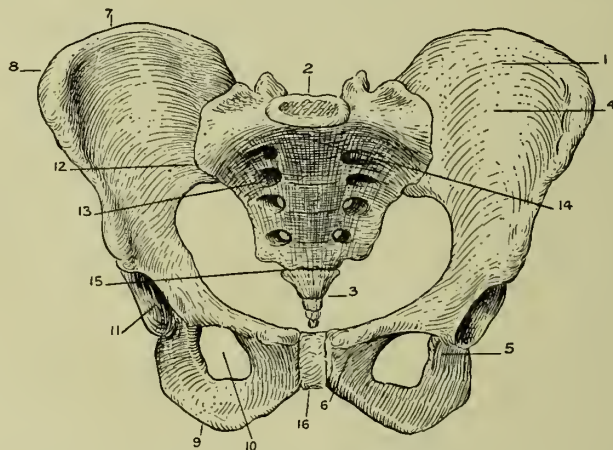


Fig. 96.—THE FEMALE PELVIS.

1, Innominate; 2, Sacrum; 3, Coccyx; 4, Ilium; 5, Ischium; 6, Pubis; 7, Crest of the Ilium; 8, Anterior Superior Spine; 9, Tuberosity of the Ischium; 10, Obturator Foramen; 11, Acetabulum; 12, Sacro-iliac Joint; 13, Holes for Nerves; 14, Promontory of the Sacrum; 15, Sacro-coccygeal Joint; 16, Symphysis Pubis.

sacral promontory behind and the upper edge of the symphysis pubis in front, forms a complete bony ring, known as the *pelvic inlet*.

**Front of the pelvis.**—The ischium lies below, and receives the weight of the body when in a sitting position. The pubis forms the front portion of the innominate bone. The three unite at the acetabulum, the cuplike socket which receives the head of the femur or thigh bone.

**Gaps in the bony pelvis.**—There are four principal gaps in the continuity of the bones, giving, as has already been mentioned, greater elasticity to the pelvis. Between the sacrum and the ilia (sing., ilium) occur two deeply indented curves—the sacro-sciatic notches, bounded below by the sacro-sciatic ligaments. Through the notches run muscles, nerves, and blood vessels from the inside to the outside of the pelvis, and among them the sciatic nerves. The other two gaps in the bony

walls of the pelvis are the obturator foramina, holes in the lower part of each os innominatum, over which is stretched the obturator membrane.

**Pelvic outlet.**—The outlet of the bony pelvis is of very irregular shape, and is formed by the tuberosities of the ischium—the coccyx behind and the pubic arch in front.

**Pelvic joints.**—The joints of the pelvis are four in number. Between each iliac bone and the sacrum occurs the sacro-iliac synchondrosis. This joint allows of a little movement, during the latter part of pregnancy, permitting the promontory of the sacrum to roll back very slightly, and so allow more room for the child's head as it enters the pelvic inlet. The sacral promontory can also roll forward later on in labour, thus increasing the antero-posterior diameter of the outlet. The third joint is known as the sacro-coccygeal joint, between the sacrum and the coccyx. The coccyx moves backwards

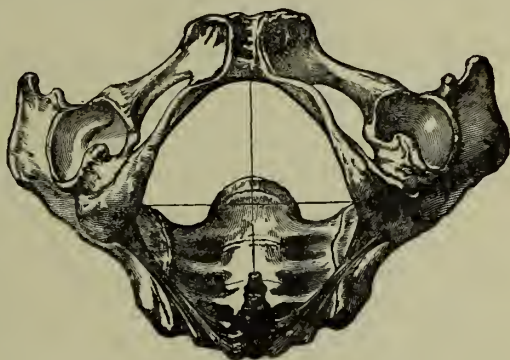


Fig. 97.—PELVIS SEEN FROM BELOW. SHOWING OUTLET OF PELVIS AND ITS ANTERO-POSTERIOR AND TRANSVERSE DIAMETERS (*Galabin*).

on this joint, thus also enlarging the outlet of the pelvis, and making more room as the child leaves the pelvis and enters the world. There is partial stiffening or ankylosis of the sacro-coccygeal joint after the twenty-fifth year. The last joint is the symphysis pubis, between the two pubic bones. There is no actual movement here, but in pregnancy it becomes infiltrated with serum, in common with the other pelvic articulations, the space between the bones becoming thereby slightly wider and more elastic.

**Pelvic measurements.**—The principal measurements of the pelvis must be committed to memory. Below is given a table which is very generally offered as a good average, and easy to remember. It represents a slightly small normal pelvis, and the pupil must bear in mind that the measurements, even of ordinary pelves, are liable to many variations. The transverse measurements of the outlet are taken from one ischial tuberosity to the other, the antero-posterior from the lower

border of the symphysis to the tip of the coccyx. The transverse diameter of the inlet is, in the living subject, somewhat filled in by muscle.

		Antero- Posterior.	Oblique.	Transverse.
		in.	in.	in.
Brim (true conjugate)	.. ..	4	4½	5
Cavity	.. ..	4½	5	4½
Outlet (after recession of coccyx)	..	5	4½	4

## II.—THE ORGANS OF GENERATION

### EXTERNAL ORGANS

**The vulva** (Fig. 98).—The external organs of generation are collectively spoken of as the *vulva*. The two external folds are known as the *labia majora*, and within are two other folds—the *labia minora* or *nymphæ*. At the upper junction of the latter occurs a small sensitive organ, the *clitoris*; below this and within the *labia minora*, the tiny opening or meatus of the urethra. The *urethra* is the passage to the bladder, 1½ inches long. Just below the meatus and also within the *labia minora* occurs a larger opening, the *vagina*, a passage leading directly to the uterus, about 3½ inches in length.

Between the vulva and the backbone is situated the anus, the opening to the rectum, or lower end of the bowel, and between the vulva and the anus is to be found the *perineum*, a triangular wedge of skin, muscle and connective tissue which is not infrequently torn in first labour. One of the principal muscles in the pelvic floor which forms part of the perineum is the levator ani, a sling or horseshoe-shaped band of muscle, attached to the back and side of the pelvic outlet. This muscle is an important factor in pushing the presenting part forward when it reaches the outlet, and completing the act of delivery. Another muscle of great importance is the sphincter ani, which surrounds the anus and has an unusually strong power of contraction. If a laceration should divide the sphincter ani, it loses this power, and the woman has no longer control over the *fæces*.

**Muscles of the pelvis.**—The muscles running down the centre of the abdomen are called the *recti* muscles (sing., *rectus*). With a primipara these muscles usually lie close together, and help to keep the child in its place. After a woman has borne children the muscles are sometimes

widely separated, increasing any tendency which may exist to what is called a pendulous abdomen. The muscles covering the ischial tuberosities, the bony structures on which the patient rests when seated, are called the gluteal muscles.

#### INTERNAL ORGANS (FRONTISPIECE)

The internal organs of generation are respectively the two ovaries, the Fallopian tubes leading out of the uterus near the upper extremity, one on each side, and the uterus or womb.

**The peritoneum.**—These internal organs are wrapped in a shiny, serous membrane, called the peritoneum, which, having lined the pelvic cavity itself, is reflected over the organs lying within the cavity. The fold of peritoneum, which envelops and suspends the uterus, Fallopian tubes, and ovaries, is called the *broad ligament*. It does not completely cover the uterus, but turns back after nearly doing so, and is reflected over the bladder, which lies in front of the uterus, and over the lower intestines, which lie behind it. The fold caused by this turning back of the peritoneum behind the uterus is known as *Douglas's pouch*; that in front of the uterus as the *vesico-uterine fold*. Inflammation in any of the pelvic organs is liable to spread to the peritoneum and cause peritonitis, greatly increasing the patient's danger, and causing her agonising pain.

**Ovaries and ova.**—The ovaries are small oval bodies, about  $1\frac{1}{2}$  inches long,  $\frac{3}{4}$  inch wide, and  $\frac{1}{2}$  inch thick. In them, not far from the surface, are produced the *ova* (sing., *ovum*), the little eggs from which, after fertilisation, human beings are developed. These ova are periodically

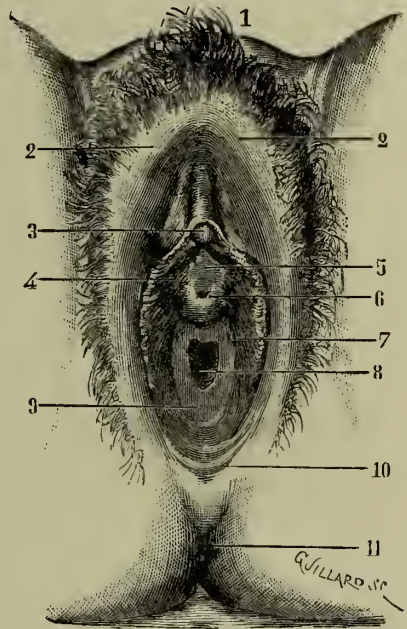


Fig. 98.—THE VULVA.

- 1, Mons Veneris; 2, Labia Majora; 3, Clitoris; 4, Labia Minora; 5, Vestibule; 6, Urethral Orifice; 7, Orifice of Bartholin's Gland; 8, Vaginal Orifice; 9, Hymen; 10, Fourchette; 11, Anal Orifice.



discharged from the ovaries, caught by the long fringe-like processes at the end of the Fallopian tubes, and caused to travel onwards down one or other tube into the uterus. If fertilised, they settle there and grow very rapidly; if unfertilised they escape and are lost.

**The uterus.**—The uterus is a hollow, muscular, pear-shaped organ, consisting of three parts: the upper rounded extremity, or fundus; the principal portion, called the body of the uterus; and the cervix, corresponding to the neck of the pear, which can be felt before labour begins, projecting into the vagina. At the end of the cervix may be detected a small opening, feeling rather like a dimple, called the *os uteri*, or *external os*. During labour this opening dilates sufficiently to allow the child to pass.

The uterus has three coats: the *peritoneal*, which we have already mentioned; the *muscular*; and the lining, formed of mucous membrane, and called the *endometrium*. The muscular coat is the thickest, and has the power of contraction to a greater degree than other muscles; this power enables it at the right time to expel its contents. The virgin uterus is 3 inches long, but as soon as the woman becomes pregnant it grows very rapidly longer and wider, so that at the end of pregnancy it measures 12 inches in length. When the fertilised ovum arrives in the uterine cavity, it burrows into the endometrium, which closes again over it. The endometrium is now called the *decidua*; that part of it which lies between the ovum and the uterine muscle is known as the *decidua serotina*, or *basalis*; that arching over the ovum is called the *decidua reflexa*, or *capsularis*. The decidua lining the remainder of the uterus is called the *decidua vera*. This inner lining to the uterus is sometimes called the maternal membrane, as distinct from the two foetal membranes—the chorion and amnion. It all comes away during the weeks following labour in minute shreds, so small that they often escape observation. When douches are given during the puerperium, these shreds can usually be seen as a sort of sediment at the bottom of the returned fluid. Fragments also come away attached to the chorion.

**Uterine blood vessels.**—The ovaries and uterus are abundantly supplied with blood vessels; this is natural when one considers that they are the parts employed in the building up of a new creature. The ovarian arteries supply the ovaries, and these spring directly from the main blood trunk of the body, the aorta. The uterus is partly supplied by a branch of the ovarian arteries, and partly by the uterine arteries,



which spring from the iliac vessels, the large branches into which the aorta divides. The uterus is also surrounded by a network of large veins.

### III.—THE OVUM

**Development of the ovum.**—The ovum, when it leaves the ovary, is a small, round body ; one hundred of them lying side by side would only cover an inch. After burrowing into the endometrium it grows with great rapidity, so that at the end of four weeks it is  $\frac{3}{4}$  inch long and over  $\frac{1}{2}$  inch broad—an egg-shaped body covered by the decidua and projecting into the uterine cavity. By the end of the third month the projection fills the cavity so that the decidua capsularis lies against the decidua vera on the opposite side, and finally grows into and becomes one with it. The fertilised ovum consists of a tiny spot or nucleus, surrounded by a yolk sac. The nucleus develops into the new creature, or foetus, and is at first nourished by the contents of the sac.

**Development of the chorion.**—The outer covering of the ovum is a membrane called the chorion, on which grow little thread-like processes called villi. Each of the villi contains minute blood vessels, and gradually they pierce through the maternal decidua, which contains the gaping mouths of the large blood vessels supplying the uterus, enlarged into spaces or sinuses filled with blood. The villi convey the blood vessels of the ovum into these sinuses, so that the blood of mother and child does not actually intermingle, but is brought so close, with so delicate a wall between, that oxygen and other gases can pass from one to the other. At first the villi are found all over the ovum, but those reaching the decidua capsularis gradually atrophy and disappear from lack of nourishment ; those penetrating into the blood sinuses below the decidua basalis, on the contrary, develop rapidly into a thick, fleshy substance, the placenta, which is attached to the little foetus by the umbilical cord.

**The placenta** (Fig. 99).—The placenta now takes the place of the yolk sac in nourishing the foetus ; it is formed during the third month, and comes away after the birth of the child. It serves three purposes : (1) it conveys oxygen from the mother's blood to the child, by means of the vein in the umbilical cord ; (2) it conveys nourishment by the same channel, so that the child may grow and develop ; (3) it returns impure blood from the foetus to the mother, so that it may be purified in the maternal system. A normal placenta weighs at full term from 1

to  $1\frac{1}{2}$  lb.; it measures 7 or 8 inches across and 1 inch in thickness. The maternal surface is of a deep red colour, and of spongy consistency, divided into lobes with a slight depression between them. The foetal surface has arteries and veins running over it from the umbilical cord.

**The amnion.**—The placenta is covered by a thin, transparent membrane, called the amnion, but it is not really attached to it, so that the amnion can be stripped back as far as the umbilical cord, of which it forms part. The amnion, after covering the placenta, makes

a bag containing the foetus, umbilical cord, and fluid in which the foetus floats—the liquor amnii.

**The chorion.**—Outside the amnion is found the second foetal membrane, the chorion. It is thicker and more friable than the amnion, and is liable to be torn at delivery, portions of it being retained in the uterus and thus causing sepsis. As the placenta is a development from one side of the chorion, the two form one structure, and the chorion cannot be peeled off the placenta like the amnion. The



Fig. 99.—PLACENTA, WITH FŒTUS.

chorion forms the outer covering of the ovum, and is in close touch with the lining of the uterus, the decidua.

**The umbilical cord.**—The umbilical cord is made up of two arteries and one vein, which are surrounded by Wharton's jelly and covered by the amnion.

**The foetus.**—The foetus at full term is 20 inches long, and weighs from 7 to  $7\frac{1}{2}$  lb. The lower extremities are less well developed at birth than the head, and do not bear the same relation to it in size as do those of an adult. The head, being also the hardest and least compressible portion of the child, is the one which gives most trouble at birth. Its measurements are so nearly those of the pelvis that it has to adjust itself

to the latter by various turns and passive movements before it can pass through. It is necessary that a midwife should know by heart the bones and normal measurements of the foetal skull.

**Foetal skull** (Fig. 100).—The vault or upper part of the skull is composed of, at the sides, the two parietal bones; at the forehead, the two frontal bones (united into one in the adult), and at the back the occipital bone. There are also the temporal bones, one on each side, containing the internal ear and the bones of the face which go to form the base of the skull, together with parts of the occipital, frontal, and temporal bones. The widest part of the skull is between the projections on the parietal bones, known as the parietal eminences.

**Sutures** (Fig. 100).—The bones are developed from a membrane which in the first stages of foetal life forms the only covering of the skull.

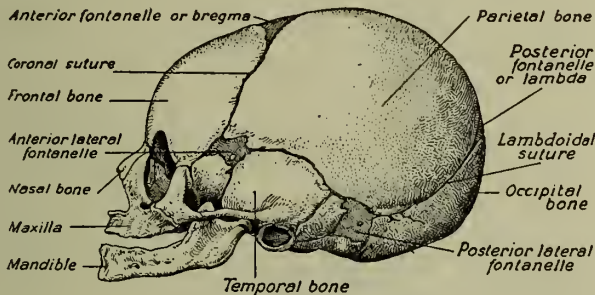


Fig. 100.—FŒTAL SKULL.

Points of bone appear in the membrane, and gradually increase until they become large islands of bone connected together by a very narrow strip of membrane. This line, which can be felt at birth, is called a suture, and various names are given it, according to its position. Between the two parietal bones is the sagittal suture, between the parietal and frontal the coronal suture, and between the parietal and occipital the lambdoidal suture.

**Fontanelles** (Fig. 100).—At the point where the two parietal bones meet the occiput, there is a small three-cornered portion of membrane left, known as the posterior fontanelle. At the other end of the sagittal suture there occurs a similar space known as the anterior fontanelle. It may be distinguished from the posterior by the facts (1) that it is much larger, (2) that it has four sutures running into it instead of three, and (3) that one of its sutures, the one between the frontal bones, is wide as it leaves the

fontanelle, and is in the form of a V. The anterior fontanelle is known as the bregma. The membranous sutures permit of a certain amount of overlapping of the bones, thus reducing the size of the head. One parietal bone over-rides the other, and together they over-ride the occipital and frontal bones.

**Measurements** (Fig. 101).—The measurements of the foetal skull are the following :—

Vertico-mental	..	..	..	..	5 $\frac{1}{4}$ inches.
Occipito-frontal	..	..	..	..	4 $\frac{1}{2}$ „
Suboccipito-frontal	..	..	..	..	4 „
Bi-parietal	..	..	..	..	3 $\frac{3}{4}$ „
Bi-temporal	..	..	..	..	3 $\frac{1}{4}$ „
Cervico-vertical	..	..	..	..	4 $\frac{1}{2}$ „

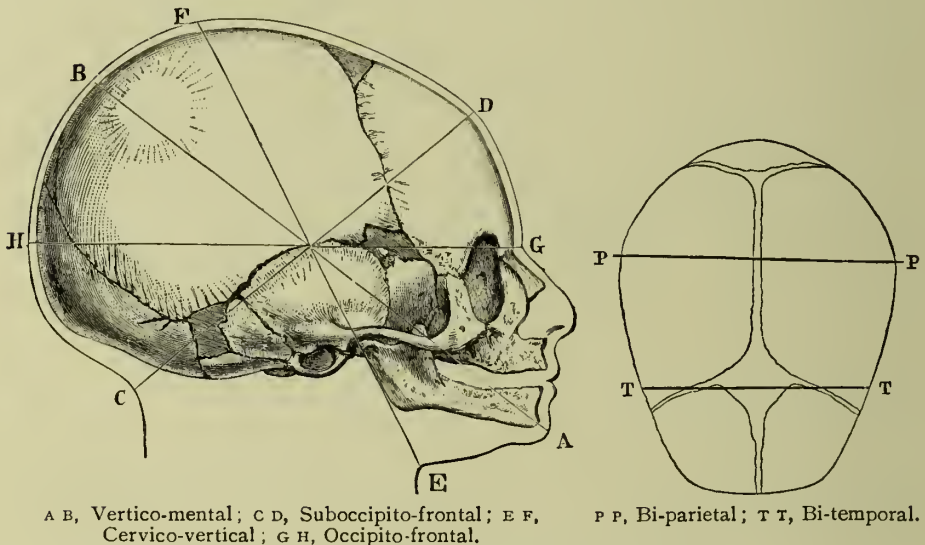


Fig. 101.—CHIEF MEASUREMENTS OF FŒTAL SKULL.

The last measurement is taken from the front of the neck to the vertex, and is of importance in face presentation.

**Growth of the ovum.**—The growth of the ovum during the ten lunar months of pregnancy is as follows :—

*End of first month.*—Ovum size of pigeon's egg. Embryo  $\frac{1}{8}$  inch. The embryo has no limbs, and cannot be distinguished from that of many animals. The heart is beating, therefore the embryo is alive.



*End of second month.*—Ovum size of hen's egg. Embryo 1 inch. The placenta is not present.

*End of third month.*—Ovum size of goose's egg. Placenta fully formed. Embryo  $3\frac{1}{2}$  inches.

*End of fourth month.*—Fœtus 6 inches long, large head, bones developing, but fontanelles and sutures gaping widely. Sex distinguishable. Fœtus may survive birth a few hours.

*End of fifth month.*—Fœtus 9 to 10 inches long, skin covered with long hair (lanugo) and also with vernix caseosa, a white substance which protects it from the liquor amnii. During the fifth month the mother first feels the movements of the child; this is usually called quickening and has given rise to the false idea that the child now begins to live.

*End of sixth month.*—Fœtus about 12 inches. If born now it may live for a few days, but is almost certain to die soon from insufficient heat and from incapacity to digest food.

*End of seventh month.*—Fœtus 14 inches long and weighs about 3 lb. The skin is of a deep red colour, and there is still not enough fat on the body to maintain sufficient heat. The child will therefore die unless very special measures are taken. As it may live it is now called viable, *i.e.*, capable of living.

*End of eighth month.*—Fœtus 16 inches long, weight 4 lb. It greatly depends on the treatment it receives whether it lives or dies. If it should survive there is no reason why it should not become as strong as a full term child. The old superstition that an eight months' baby is less likely to live than a seven months' one is now exploded.

*End of ninth month.*—Fœtus 18 inches long, weight 5 lb. The nails reach to the end of the fingers but not beyond. With male children one or both testicles may have descended into the scrotum.

*End of tenth month.*—Full term. Length 20 to 21 inches. Weight, 7 lb. The child is fatter and has lost the lanugo. It makes strong movements and has a vigorous cry.

It is easy to remember roughly the length of the fœtus at its different stages by noting that after the fifth month the number of inches is twice that of the month—fifth month 10 inches, sixth month 12 inches, etc.



## CHAPTER XLI

### PREGNANCY—NORMAL LABOUR

Symptoms of Pregnancy, Certain and Uncertain—Hygiene of Pregnancy—Care of the Breasts—The Midwife's Advice. Premonitory Symptoms of Labour—Stage of Dilatation—Stage of Expulsion—Placental Stage—A Midwife's Duties during Normal Labour—Preparation of the Patient and of the Bed—Management of the Three Stages—Care of the Infant—Mechanism of Labour—First Position of the Vertex—Flexion—Internal Rotation—Extension—External Rotation—Occipito-posterior Positions, Reduced and Unreduced.

#### I.—PREGNANCY

**Symptoms of pregnancy.**—The symptoms of pregnancy are the following :—

1. **Amenorrhœa, or cessation of the menses.**—Women, as a rule, do not menstruate during pregnancy, and the probable date of delivery is therefore counted from the last regular period, 280 days. To compute quickly, take the first day of the period, say December 31st, reckon back three months, September 30th, and add one week = October 7th. Labour will probably occur within a fortnight of this date. Some women menstruate slightly during the first two or even three months of pregnancy.

2. **Morning sickness.**—This is a very early symptom of pregnancy. If it is troublesome, the patient should take food before rising. If it persists after the first three months she should consult a doctor.

3. **Progressive enlargement of the abdomen.**—The height of the fundus above the symphysis pubis is a guide to the length of pregnancy. At the fourth lunar month it rises above the pelvic brim ; at the fifth month it is midway between the umbilicus and symphysis ; at the sixth month it reaches the umbilicus ; at the eighth month it is midway between the umbilicus and the ensiform cartilage, at the end of the breast bone ; at the ninth month it nearly reaches the ensiform cartilage ; at the tenth month the fundus sinks.

4. **Fulness of breasts.**—This is experienced during pregnancy, fluid being secreted from about the third month. There is a deepening

and widening of pigmentation about the nipple, called the areola, and on the areola are found raised spots, Montgomery's tubercles.

**5. Foetal movements.**—The so-called quickening of the infant, experienced during the fifth month.

**The only certain signs of pregnancy.**—The symptoms mentioned above may all be the result of other causes than pregnancy. The only certain signs are the hearing of the foetal heart, and the feeling of the foetal limbs and movements by a trained observer. The *heart sounds* cannot be detected until the fifth month, and are then only faintly audible, so it is wise for a nurse to express herself guardedly if asked to decide whether a patient is pregnant or not, and in most cases refer her to a doctor. The condition when a woman wrongly believes herself to be with child is called *pseudocyesis*. Less important signs of pregnancy are the *striæ gravidarum*—the purplish marks to be seen on the abdomen, occasioned by the stretching of the skin. The silvery marks also to be seen, as the result of past pregnancies, are called *lineæ albicantes*.

**Contractions of the uterus.**—These are to be felt when a cold hand is suddenly placed on the abdomen.

**The uterine souffle.**—A soft blowing sound which keeps time with the mother's pulse, and is probably occasioned by the passage of the blood through the uterine arteries.

**Violet coloration of the vulva and vagina,** due to congestion of the pelvic veins.

**Softening of the cervix.**—This sign could only be detected by a nurse who had often examined non-pregnant women, and who was familiar with the normal cervix.

**Ballottement.**—This sign is not one that is frequently available, it only occurs between the fourth and seventh month. If an examining finger is introduced into the vagina of a pregnant woman, it will in most cases find a solid body, *i.e.*, the foetal head, filling the lower part of the uterus. A sharp tap on the uterine wall will cause the child to recede; in a few seconds it will float back through the liquor amnii, and the finger will be conscious of its return. This is called ballottement.

**Hygiene of pregnancy.**—A woman when she is with child has double work thrown upon all her organs. It is particularly important that she should thoroughly digest her food as she must nourish her child as well as herself; she must absorb enough oxygen from the air to purify its blood as well as her own; she must also get rid of the waste products

from its system as well as her own by the action of her skin and lungs, her bowels and kidneys. It is obvious therefore that she must lead a very healthy life during her pregnancy, taking light digestible foods, with a sufficiency of fluids; a fair amount of exercise, and mild aperients whenever necessary. Such aperients are liquid extract or tabloids of cascara sagrada, infusion of senna-pods or leaves, confection of sulphur and senna. Castor oil should seldom be given in pregnancy, as its tendency is to constipate the patient, and it is not a drug for frequent administration. There is also danger that it may bring on a miscarriage.

With regard to *exercise*, a distinction should be drawn between the mother of a large family, probably with bad varicose veins and much overworked, who needs to rest her legs as much as possible, and a young woman expecting her first baby, who will do well to take walks, go up and down stairs, and generally lead a thoroughly active life.

**Care of the breasts during pregnancy.**—The patient should take a warm bath daily (warm, not hot, as that might cause her to miscarry), and prepare her nipples for their future task by washing them carefully with soap and water, washing the soap well off and drying them with a towel kept for the purpose. If it is a first pregnancy, she may draw out the nipple between the first and second fingers. If nipples are moist and sore, a weak spirit lotion may be of service; if dry and cracked, lanoline may be applied. It is not safe to order the same routine treatment for every mother. Heavy pendulous breasts should, after washing, be dusted beneath with boric powder.

**The midwife's advice.**—A midwife may do much to ensure the health and safety of her future patient by the advice she gives her when she comes to book. In addition to the points already mentioned, she should recommend her to eat plenty of fruit and vegetables, and very little butcher's meat, since the latter puts more strain on the kidneys. Unless under a doctor's orders, alcohol should never be allowed during pregnancy. The patient should also be advised not to wear corsets, as all pressure is very injurious. A well-made belt which serves to support the heavy abdomen instead of pushing it down may be recommended. The midwife should instruct her patient to bring her a specimen of urine to be tested, and to report herself if there should be swelling of the face, vulva, legs, varicose veins, or any other disorder. The patient should keep the windows open always both by day and night.

## II.—NORMAL LABOUR

Normal labour occurs when the foetus has become mature, that is to say when it is prepared for an independent existence.

**Premontory symptoms of labour.**—Labour is usually preceded by a preparatory stage with certain definite preliminary symptoms, the chief of which is the sinking of the uterus. The patient will be conscious of decreased pressure on the lungs, and her breathing will be easier. The pressure on the bladder will be greater after this sinking of the uterus, and micturition will be consequently more frequent. There will also be increased pressure on the rectum. Sinking does not usually take place in a multipara (a woman who has borne children) until a day or two before labour. With a primipara (a woman who is in labour for the first time) it may occur as much as a fortnight earlier.

**False pains.**—In this stage false pains are not infrequent; they are not easily distinguished from true labour pains, but are usually irregular in character, abdominal rather than sacral, and unaccompanied by “show” (page 144). They are not attended by uterine contractions. The only certain distinction is to be found on vaginal examination, as false pains have no effect upon the cervix. They are often occasioned by constipation, in which case they are relieved by an enema.

The process of labour is divided into three stages. The *first* extends from the shortening of the cervix to the complete dilatation of the os; the *second*, from the dilatation of the os to the birth of the child; the *third* from the delivery of the child to the delivery of the placenta.

## FIRST STAGE OF LABOUR—STAGE OF DILATATION

**Contractions of uterus.**—When true labour pains begin, they occur at regular intervals, sometimes as much as an hour apart; each pain is really a contraction of the uterine muscle, at least of the upper part or body of the uterus. While the pain lasts, the cavity of the uterus is smaller than it was before, and although the muscle relaxes as soon as the pain is over, it never becomes as large as it was before the contraction.

**Retraction of uterus.**—The shrinking in size consequent upon the successive contractions of the uterus is known as the retraction of the uterus. During the process the upper part of the uterine wall becomes



thicker; the lower segment and the cervix or neck has an entirely different property. Each pain, instead of contracting and thickening, causes these portions to dilate and to thin. With the pains the cervix expands gradually from above downwards, and becomes drawn up into the body of the uterus, so that in the first stage of labour the uterus ceases to have the shape of a pear and acquires that of an apple. At



Fig. 102.—BAG OF MEMBRANES BULGING AT THE OS.

the termination of this process, the presenting part comes to lie directly over the external os.

**The "show."**—As the lower uterine segment expands, the membranes lying against it become separated, giving rise to a slight streak or tinge of hæmorrhage, which is known as the "show." It is usually mixed with a mucous discharge, coming from the expanding cervix, and the two together form a sure precursor of labour.

#### **Dilatation of the os (Fig. 102).—**

The first change that happens to the uterus in labour is, as we have said, the shortening of the cervix; the second is the dilatation of the os.

The uterus at full term contains the placenta, and a bag of membranes holding the child, the cord, and a quantity of fluid called the liquor amnii. This fluid fills in all the gaps caused by the two solid bodies, the child and the placenta, and a small portion escapes in front of the presenting part, and presses down into the cervix. This is called the fore-water, in contradistinction to the fluid pent up behind the child, known as the hind-water. Fluid has always the property of adjusting itself to the shape of the walls which surround and contain it; the bag of water forms the best possible dilating agent for the os, pressing equally at every point, and keeping the hardness and irregularities of the child's bones away from this sensitive opening. The liquor amnii also serves to protect the fœtus and umbilical cord from injurious pressure. The os opens gradually, so that at first on examination it is felt as being



the size of a sixpence, and continuing through regular gradations to the sizes of a shilling, half-crown, and crown, until it reaches a point when it can be felt in front, and not at the back at all; known as the anterior lip. After this the anterior lip is also drawn up into the uterus, which now forms a continuous passage with the vagina. Dilatation is slow at first, but as soon as the bag of water begins to press down into the os, it goes on more quickly, as the fluid pressure can then act directly on the edges. During the first stage the principal force concerned is the strongly contracting uterine muscle, aided by the pressure of the fluid inside the uterus. The child as a rule does not come much lower, but is pushed into a more compact body by these contractions, each of which, as we have seen, leaves the upper part of the uterus a little smaller and thicker. This is sometimes called compaction.

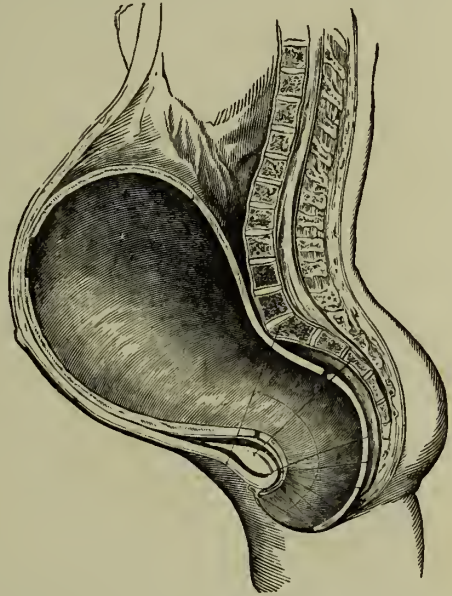


Fig. 103.—FULL DILATATION OF THE CERVIX.

#### SECOND STAGE—STAGE OF EXPULSION

During the second stage, the passage being open to its fullest extent (Fig. 103), the expulsive forces come into play, the bag of waters bulges unsupported into the vagina, and at this point should burst. The liquor in front of the presenting part escapes, but if the head well fills the vagina the greater part of the fluid in the bag remains until delivery. The uterus now closes down upon the child, redoubling its contractions in the effort to expel its contents. In this it is aided by the abdominal muscles, and to bring their power into full play, the patient fixes her feet, holding her breath, and bears down. The pains, although stronger than before, are still intermittent in character, and not infrequently she sleeps for a few moments in the intervals. At this point the bladder is pushed up by the advancing head, and the rectum is pushed down, its contents being involuntarily expelled. The vagina becomes dilated by the

advancing fœtus, the pelvic floor is distended, the edge of the perineum growing thin and transparent, and the child is born.

#### THE THIRD STAGE—PLACENTAL STAGE

The third stage begins after the expulsion of the child. The uterus should contract firmly down as the baby is born, and although it will relax at intervals, and a small amount of hæmorrhage escapes, the action of the normal uterus is to remain permanently smaller and retracted until after the delivery of the placenta, when it becomes smaller still.

At the beginning of the third stage there is a natural period of rest, during which, although contraction and retraction are maintained, there is no pain. After twenty minutes, painful contractions are usually felt. There should be no separation of the placenta until after the child is born, the maternal surface still remaining attached to the uterine walls. As contraction and retraction continue, however, the placental site shrinks, and becomes smaller than the placenta, which consequently peels off (Fig. 104). The shrinkage closes the mouths of the blood vessels that communicate with the placenta. A further result of the uterine contractions is that the placenta is forced into the lower uterine segment, or the upper part of the vagina. In a normal labour, the mother's abdominal muscles come into play, and in consequence of her bearing down the placenta passes out at the vulva, gliding out sideways. The uterus will now be contracted, and can be felt abdominally as a firm tumour, about the size of a large orange.



Fig. 104.—NATURAL MODE OF EXPULSION OF PLACENTA.

### III.—THE CONDUCT OF NORMAL LABOUR

**A midwife's duties during normal labour.**—In learning to conduct a case of normal labour, the midwife must remember that her duty is to assist the natural process; throughout the labour she must practise observation, cleanliness and kindness. If she does not train herself to observe, great disaster may overtake the patient. If she does not practise surgical cleanliness in every detail, all the horrors of sepsis may be apprehended. If she is not kind she loses one of the greatest

opportunities that can fall to a woman, and incidentally (which matters far less) she will lose her practice.

From the first moment that a patient is put under her charge, the midwife must carefully note all the facts bearing on the case. The histories of previous pregnancies are, of course, most important, then come notes on the present pregnancy and the general condition of the patient. The midwife should not fail to make a note of the complexion and general intelligence, as well as the temperature, pulse and respirations, at the very outset of labour.

**Preparation of the patient.**—When possible, the urine should be tested for albumen. An enema must be given; not only does this remove the obstruction of a loaded rectum, and so hasten delivery, but it avoids one septic danger. The patient's genitals must be well cleansed after an action, and everything offensive removed immediately from the room.

It is not always easy to see the lying-in room before labour; we all know that it should be as clean as possible, and as free from superfluous furniture as the patient will permit. The midwife must wash the patient as thoroughly as time and circumstances will allow, paying special attention to the region between the sternum and the knees, and the external genitals, which should be well lathered with soap and water and lysol.

**Preparation of the bed and the room.**—A clean nightdress and petticoat must be put on, and the bed prepared; the cleanest linen the house affords must be used for this. No old mackintosh may be permitted, but clean brown paper, and an old sheet which has been boiled should be ready. The bed valence should be removed, and any pieces of loose carpet that may be near the bed. A table or substitute must be obtained, and two chairs, all of which should be covered with newspapers. Clean newspapers which have been baked in the oven are of the greatest possible value.

Although the rest of the room may be far from clean, the midwife has now three points on and from which she can work, the patient, the bed, and the table. She must allow nothing unclean to approach, and if contamination should occur, it must instantly be removed.

While making these preparations, the real object of them should never for a moment be forgotten, *i.e.*, the well-being of the patient.

Throughout the midwife must cheer and encourage her, putting herself in her place, and remembering that for months she has been intensely dreading the crisis which is now upon her, this time of pain and danger.

#### MANAGEMENT OF THE FIRST STAGE

During the first stage the woman may walk about ; she must take hot milk, or a cup of tea often, and be reminded to empty her bladder. The abdomen should frequently be observed, and the fœtal heart sounds listened for from time to time.

#### MANAGEMENT OF THE SECOND STAGE

When second-stage pains begin, it is often necessary to make a vaginal examination ; not until then may the membranes be ruptured, and the pulley given. By palpation between the rectum and coccyx the examination may sometimes be avoided. In England it is usual for the patient to lie on her left side, and this is convenient both for observing the perineum and for holding and supporting her back during the pains.

**Appliances.**—As delivery approaches, the midwife must put out all that she will require—a bowl of lotion for her own hands, perchloride of mercury 1 in 1,000 ; for the mother a bowl of swabs for the rectum ; a vessel in which to receive the placenta ; liquid extract of ergot ; a measure glass and drinking water. For the infant, sterilised thread and scissors in lotion (carbolic 1 in 20, or lysol), linen rag to cleanse the mouth, eye swabs in boiled water, and a flannel receiver.

After thorough disinfection (to be hereafter described), the midwife will seat herself by the patient, and concentrate her attention on protecting the vulva from rectal discharges, and on preventing a laceration of the perineum. The points to be remembered with regard to the latter are (1) to retard descent until the elasticity of the perineum is fully developed, (2) to keep the head well flexed until the nape of the neck becomes fixed under the pubic arch, thus ensuring that the sub-occipito-frontal diameter distends the vulva, and not the occipito-frontal—a gain of half an inch, (3) not to allow the head to be born at the height of a pain, but to permit extension in the interval.

At first, in the second stage, the patient will be helping herself by using the pulley. While doing so her chest and her knees are close together, and she will lie across the bed. For the delivery the pulley



must be taken away, her back should be straightened until her shoulders are in a line with her buttocks, and she should be instructed to open her mouth and draw in deep breaths with each pain, thus diminishing her expulsive efforts. The midwife should frequently encourage the patient, assuring her that all is going well.

**The midwife's first duties to the child.**—When the head is born, the midwife must feel for the cord; if round the neck it must be drawn over the head, and if too tight, back over the shoulders. If neither of these is possible it must be instantly divided, and both ends firmly held until the child is born. The eyelids must be cleansed before they are opened with the swabs.

**Delivery of the shoulders.**—There is usually a short pause between the delivery of the head and the shoulders. When the pain returns, the long diameter of the shoulders rotates into the antero-posterior diameter of the outlet. When the perineum is much distended this rotation may be assisted by the midwife. Both shoulders should not be permitted to be born at once. If there is difficulty, carry the child's head towards the mother's sacrum, allow the point of the anterior shoulder to become fixed under the pubic arch, then, bearing the child's body forward between the mother's thighs, permit the posterior shoulder to emerge. The buttocks and feet should come gently, and the midwife's left hand must firmly follow the fundus of the uterus down. Where there is serious delay with the shoulders, the difficulty is probably because they have not rotated; attempts should be made to rub up a pain, and the midwife, drawing the child's head gently towards the perineum, may pass her forefinger up, hook it under the anterior shoulder, and assist the rotation. The mother's vulva should be covered with a sterilised swab or pad.

A healthy child when born will cry loudly; care should be taken that its mouth is first wiped out, as fluid must not be drawn into the lungs. It should be turned on its right side.

#### MANAGEMENT OF THE THIRD STAGE

The third stage of labour is the dangerous stage. As soon as the child is delivered, the mother's pillow should be removed, and she should be turned gently on her back; the room must be cool and very quiet, and the patient must not be encouraged to talk. The midwife must concentrate her attention on the uterus, and sinking her hand



deeply in the patient's abdomen, should hold the fundus. As long as the uterus remains hard and small no further treatment is needed, but if anything more than the natural relaxation occurs, the midwife may gently rub the fundus of the uterus, and so stimulate it to contract.

**Separation of the child.**—When the condition of the uterus is entirely satisfactory, and the pulse slow and regular, the midwife may again wash her hands in order to tie off the child. The cord having ceased to pulsate near the umbilicus, it must be firmly ligatured about two inches away, a reef knot being made, a second ligature tied an inch further down, and aseptic scissors used to cut the cord, the points being turned into the palm of the midwife's hand. The infant must be wrapped in flannel and placed in a safe position.

**Expulsion of the placenta.**—The uterus continuing in good condition, and the pulse slow, the midwife will scrub and disinfect her hands, after which she must again sink her left hand round the fundus, keeping her right hand free for the reception of the placenta. In normal labour the uterus expels the placenta into the lower uterine segment, or vagina, at the end of about thirty minutes. If a ligature is tied round the cord at the vulva it is easy to trace whether the placenta has left the uterus, by the lengthening of the cord. Other signs are that the fundus will feel smaller, and yet will rise near the umbilicus and be more movable.

**Expression of the placenta.**—If not naturally expelled, the placenta may be delivered by expression, but only when the uterus is in a state of contraction. Holding the fundus as above, the midwife with her right hand presses the left hand somewhat sharply downwards and backwards towards the coccyx. The uterus must then be released in order to prevent the membranes being caught in the os. The right hand must receive the placenta, carefully refraining from touching the vulva, and the membranes should be gently and very slowly delivered.

**Delivery of the membranes.**—There must be no hurry to examine the placenta until good retraction has taken place ; until this has occurred the woman's life is in danger, and there is no means of securing good retraction except by obtaining good contractions. The midwife must continue to hold the uterus and massage it when it grows soft, remembering that there should be no cavity in it now, but that its walls should be close together, and no clot allowed to form. If the uterus has been allowed to enlarge, clot must be firmly expressed.

**Examination of the placenta.**—The placenta must now be examined ; a convenient method is to wind the cord round the left hand until the placenta is reached, and holding it up with the right hand inside the bag, take a general survey of the placenta and membranes, observing the size and situation of the large opening. Supporting the placenta on the left hand, the membranes should then be gently pushed back until the maternal surface is exposed, even the smallest clots must be removed, and the lobes carefully scanned to see that no part is torn or missing, and that no blood vessels run off on to torn chorion, suggesting a missing island of placenta. The amnion must be stripped from the chorion back to the cord, in order to be sure of the presence of both membranes. All being satisfactory, the placenta must then be burnt. This duty should never be left to the patient's friends.

**Bathing the patient's genitals.**—The midwife's hands must again be thoroughly disinfected before she proceeds to bathe the patient. She must well wash the vulva and the internal surfaces of the thighs with soap and water, and a disinfectant, and flush the parts thoroughly down.

**Examination for injuries.**—Search must now be made for laceration or abrasions, the labia being gently but thoroughly separated. Small injuries may often be found about the urethral meatus. Serious lacerations of the perineum necessitate the immediate summoning of a doctor. Slight bruises and excoriations of the labia may be dusted with iodoform and boracic powder. A sterilised pad or napkin must be applied, everything soiled removed from the bed and room, and the patient made perfectly comfortable. The binder may be rolled in under the back, but should not be pinned up till later. Milk should be given.

**Care of the infant.**—The midwife must now weigh, wash and dress the baby. After the face is washed, the eyes should be opened, and thoroughly flushed out with boiled water, after which one drop of solution of nitrate of silver 2 per cent. must be inserted into each eye with an eye-dropper. The cord may be bathed with lysol and water, dried with wool, and wrapped in sterilised linen. The infant must be examined for malformations, such as cleft palate, hare-lip, imperforate anus or urethra.

**Final duties to the patient.**—The midwife must make sure that the uterus is well contracted, adjust the binder, take pulse and temperature, and return the bottles to the bag. Everything that has been used for the patient—bowls, scissors, syringes, etc.—must be taken home in a separate

parcel, and boiled before they are replaced. The midwife must leave everything that she has used, belonging to the patient, clean ; she must not leave the clearing up, or any part of it, to the patient's friends, who will be profuse in offers of help, and afterwards complain loudly of the work involved.

**Summary of points to be noted.**—Before leaving the house the midwife must note the following points :—

1. That the uterus is firmly contracted and in normal position.
2. That there is no hæmorrhage, either internal or external.
3. That the placenta and membranes are complete.
4. That the perineum is intact or else sutured.
5. That the patient's pulse is slow and good.
6. That there is no hæmorrhage from the infant's cord.
7. That both mother and babe are in good condition.

#### IV.—THE MECHANISM OF LABOUR

**Definition of mechanism.**—The pupil will understand this subject in exact proportion to her mastery of the anatomical chapters.

In order to understand the mechanism of labour we must realise the shape of the bony pelvis, the arrangement of the soft parts, the action of the uterine and abdominal muscles, and the principal diameters of the pelvis and fœtus. Certain diameters of the fœtal head are greater than certain of the pelvic diameters, so it is evident that the child cannot pass through the pelvis in any and every position, but must adapt itself, both by moulding and movement, to the curve of the canal. This adaptation of the fœtus and the powers that bring it about constitute the mechanism of labour.

**The child in utero.**—The child at full term lies normally in the uterus in an attitude of flexion, the head bent, the arms folded, the thighs in contact with the abdomen, and the feet touching the thighs. In this position the breech with the feet is the bulkier part, and so naturally occupies the fundus or broad end of the pear. There are four positions in which the head or vertex may present (Plate LXIII.). In two of these the occiput is anterior (occipito-anterior), and these are the normal and most favourable positions. In the other two positions the occiput is posterior. In about 85 per cent. of head presentations the long diameter of the head occupies the right oblique diameter of the pelvis. This is so because there is more room in the right

oblique diameter, as the sigmoid flexure of the rectum comes on the mother's left side.

**First position of the vertex.**—In the commonest position of all, the child's back is directed to the mother's left front, the occiput pointing to the left foramen ovale, and the forehead to the right sacro-iliac synchondrosis. That portion of the child which lies over the os is termed the presenting part; in the one we are considering the vertex or top of the head presents, and the position is termed left occipito-anterior. It will be diagnosed abdominally by finding the firm resistance of the back directed to the mother's left front, the breech at the fundus, the small parts on the right. The fœtal heart sounds will be heard on the left side, half an inch below the umbilicus. By vaginal examination the sagittal suture will be found in the right oblique, and the small or posterior fontanelle can be felt towards the left front of the mother. If the head is not well flexed the anterior fontanelle may also be reached to the mother's right back. Bad flexion will retard delivery. In the right occipito-anterior position the exact opposite of these signs will be found.

Before labour begins, the vertex may have engaged in the pelvis, or it may still be freely movable above the brim.

During labour the passive movements undergone by the fœtus are (1) descent, (2) flexion, (3) internal rotation, (4) extension, (5) external rotation (Plate LXIV.).

**Causes of flexion.**—The child is already, as we have seen, in a condition of flexion, owing to the natural tone of the muscles. It becomes more flexed by the action of the uterine force on the spinal column. The effect of this action is to convert the head into a lever, having a long arm in front of the spine and a short arm behind. As the head is pushed down through the pelvis it meets with considerable resistance from the mother's soft parts, and this resistance is felt most by the long arm of the lever, on which it gets a greater hold, and which is consequently pushed up.

**Causes of internal rotation.**—As the vertex is pushed down upon the pelvic floor it finds that this floor is securely fastened on to other structures at the side and back, but has a good deal of "give" in it down the middle, and is open in front, thus forming a deep sling. The lowest or presenting part of the head, the vertex, finds itself therefore in a gutter running from back to front, and, feeling little or no resistance in front, it naturally rotates in that direction. This is an



important point to bear in mind in midwifery—that the first part of the child which reaches the pelvic floor is always swept to the front. The levator ani muscle, by its peculiar sling-like shape, forms the principal factor in this movement of internal rotation.

**Cause of extension.**—Descent continues until the occiput becomes fixed under the pubic arch; the uterus has hitherto been able to act with most force upon the back of the head, that being nearer to the firm column of the spine, but it now experiences a check in this direction. Its energy is therefore employed upon the face, which emerges from the vulva by the movement called extension, and the head is born.

**Cause of external rotation.**—There is usually a short pause after this occurs; the shoulders which are not yet through the brim of the pelvis engage, in their turn, the long diameter of the shoulders in the long diameter of the brim, *i.e.*, the oblique. The shoulders enter the pelvis in the opposite oblique diameter to that taken by the head, in this case therefore the left oblique. The anterior shoulder is the lowest, the first to reach the pelvic floor, and the one that will be rotated under the pubic arch. The rotation of the shoulders inside the pelvis causes the head to move outside the pelvis, turning it to the mother's right thigh. This is known as external rotation.

It should be noticed that descent takes place simultaneously with the other movements, and that of the remaining four, the last two movements undo the action of the two first.

Extension undoes flexion, external rotation undoes internal rotation. To remember which way the head will rotate externally, it is only necessary to remember which way it lay when it was inside the pelvis, as it returns to its original position.

In the *first position of the vertex* the occipito-frontal diameter of the head will be increased, and the right parietal bone will overlap the left. This is called **moulding**. The **caput succedaneum**, or soft doughy swelling on the scalp formed on the part least pressed upon, will be found at the back of the right parietal bone. This swelling is caused by the effusion of serum from the blood into the surrounding tissues.

In the *second position of the vertex* the head enters in the left oblique diameter, the occiput towards the right foramen ovale. The mechanism is precisely similar to that of the first position. The left parietal bone will over-ride the right and the caput will be found at the back of the left parietal.



The midwife is advised thoroughly to master the first and second positions of the vertex with the help of the pelvis and dummy foetus, before attempting to go further.

**Occipito-posterior positions.**—There are two classes of occipito-posterior positions, reduced and unreduced, or in other words easy and difficult. In these positions the infant's back is turned to the mother's back, and the occiput to one or other sacro-iliac synchondrosis. The positions are termed right and left occipito-posterior, the right being by far the more common.

**Diagnosis of occipito-posterior positions.**—Abdominally the diagnosis will be made by finding the child's limbs to the front of the mother's abdomen, the breech at the fundus, the back, rather obscurely felt, behind and to the right. The foetal heart sounds will be heard in the right flank. Vaginally the sagittal suture will be found in the right oblique diameter, the anterior fontanelle to the left front of the mother, and (if flexion is good) the posterior fontanelle to the right back. It is therefore a favourable sign in the third and fourth positions of the vertex to feel both fontanelles, as this indicates good flexion.

The diagnosis of the fourth position may be made in a manner similar to that of the third; right and left being reversed.

Even when the normal mechanism occurs, labour in these positions is longer and more painful than in the first and second positions of the vertex. Taking the third position, the normal conduct of the case will depend upon good flexion. When descent takes place with flexion, the vertex will first meet the pelvic floor, and will, according to the rule previously given, be rotated to the front through three-eighths of a circle. The occiput will now come under the pubic arch and labour will go on exactly as if the child had always been in the second position. It is obvious that labour will be longer, as it will take more pains and a longer time to effect this movement, which is called **long rotation**. There will also be a liability to early rupture of the membranes, as the head does not at first fit down so well into the pelvis, and so does not shut off the hind-waters from the fore-waters.

The movements in a normal occipito-posterior position are therefore (1) descent, (2) flexion, (3) long rotation, (4) extension, and (5) external rotation. In the greater number of these cases, long rotation takes place successfully, and they are then termed reduced or rotated. The moulding of the foetal head may not be marked if rotation has occurred early, and

the **caput** will form a doughy ridge passing from the back to the front of the left parietal. If the midwife will get an assistant to hold the foetal skull in the dummy pelvis, and to rotate the skull while she holds a piece of chalk on the presenting part, she will see how this is brought about. This description applies in all points to the fourth position of the vertex except that in that position the head of the child will turn to the mother's right thigh, and it will be born as a first. The caput will be found as a ridge on the right parietal.

**Unreduced occipito-posterior position.**—But all cases do not follow this favourable course. The fact that the spine of the child is directed to its mother's spine does not favour good flexion, but tends to arrest the natural bowing out which occurs when the child's back only meets the mother's abdominal wall. Moreover, in the first and second positions of the vertex, when the long diameter of the head occupies one oblique, the bi-parietal diameter is in the other oblique; if we put the foetal skull into the pelvis in either occipito-posterior position, we shall see that the bi-parietal diameter falls too far back behind the oblique. Where there is plenty of room, this will not matter, but if the head does not well fit the pelvis, the bi-parietal will be arrested in its advance, and so flexion will be prevented; the sinciput, reaching the pelvic floor, will remain at the front, and the occiput will be in the hollow of the sacrum. If the pelvis is large, the child of suitable size, and the patient able to use her pains well, the forehead will fix under the pubic arch, the uterus will push the vertex down, and out at the vulva, and by a movement of extension the face will be born. The perineum is in greater danger from this method of delivery, as it is distended by the occipito-frontal diameter instead of the suboccipito-frontal. The occiput escapes from under the perineum by extreme flexion, and then by extension the face is born. It is called an unreduced or unrotated occipito-posterior position, and the child is born face to pubes. The movements are (1) descent in the absence of flexion, (2) rotation of the occiput into the hollow of the sacrum, (3) flexion, (4) extension, and (5) external rotation.

If the favourable conditions already enumerated are not present, progress will be arrested before flexion occurs, and the case will become instrumental. The moulding in persistent occipito-posterior positions produces a steep head by the elongation of the cervico vertical diameter. The **caput** for the third position will be on the front of the left parietal bone, that for the fourth position on the front of the right parietal.

## CHAPTER XLII

### OBSTETRIC DIAGNOSIS

External Examination: Inspection — Palpation — Auscultation — Abdominal Measurements—Intercristal and Interspinous Diameters—To measure the Diagonal Conjugate. Vaginal or Internal Examination: Disinfection of Genitals and of the Nurse's Hands—Inspection—Examination.

THERE are two methods of examining a pregnant woman: the internal and external methods. The midwife should endeavour to perfect herself in *external* examination, for the following reasons: Firstly, she can learn more by examining abdominally, and to beginners this method is easier. Secondly, it should be neither painful nor offensive to the patient. Thirdly, there is no danger involved in the proceeding, while a vaginal examination must always be regarded as a serious undertaking, and one which, if carelessly performed, may kill the patient.

#### ABDOMINAL OR EXTERNAL EXAMINATION

The abdominal examination may be divided into four parts: inspection, palpation, auscultation, and measurement. The bladder must first be emptied, and the patient placed on her back with the knees slightly drawn up. The patient should open her mouth and breathe gently, and the midwife's hands must be clean, warm, and dry.

**Inspection.**—The general outline of the abdomen should first be noticed; to do this the midwife should drop on one knee for a moment so as to bring the eye on a level with the abdomen, and note its curve, which may be either globular, ovoid, flat, or irregular. Abdominal fat often produces a pouch-like appearance. The condition of the umbilical scar comes next, whether everted, level, or depressed. The presence of the linea nigra and the striæ gravidarum should be observed. Signs of the thickening of the skin over the pubes, indicating œdema, should be sought for. Any scars or marks indicating former illnesses are important. Large size, or a furrow running down the abdomen, may suggest twins.

**Palpation** (Plate LXV.).—*Fundal grip.* The midwife proceeds to

map out the uterus and to notice the height of the fundus in relation to the ensiform cartilage, whether touching it or three or four fingers' breadths below. Next, standing on the patient's right side and facing her, she must lay both hands on the fundus, with the thumbs rather extended, and by careful feeling endeavour to determine what lies between them. The breech feels larger and softer than the head, and the head may be moved independently.

*Umbilical grip.*—Drawing the hands gently downwards to the region of the umbilicus, the back and limbs must be felt for. By dipping the three fingers through the liquor, and gently feeling, not with the tips, but with the middle joints, the limbs may be felt as small, movable knobs. When these have certainly been obtained, firm pressure over them will help the other hand to locate the back. In occipito-posterior positions only the side of the child can be felt; and when the back is completely turned to the mother's back knobs are obtained on each side of the umbilicus. A rough estimate should be made as to the quantity of liquor amnii present. By placing one hand on the fundus and three fingers of the other midway between the pubes and the umbilicus, we can discover the anterior shoulder in the two first positions of the vertex.

*Pawlik's grip.*—The little finger should be laid along the side of the pubes; by sinking the gently-curved hand, the part at the brim may be seized and held. (In vertex cases this will be the head, or if that is deeply engaged, the shoulder.) If the vertex is presenting, a greater prominence will be felt on one side than on the other, which will be the sinciput.

*Pelvic grip.*—Now turning towards the patient's feet, the midwife dips deeply with the finger tips of both hands into the pelvic brim. If labour is not too far advanced and she finds a hard body there, the case is certainly vertex. If in Pawlik's grip she has encountered the head high above the brim, she must see if it can be made to enter with her hands, in a similar position, but on the head itself, while an assistant raises the mother's shoulders. In order to learn to examine the abdomen systematically the midwife should from the first accustom herself to make notes of what she finds at each grip. Each normal case that she examines intelligently will help to prepare her for the abnormalities she may meet later.

**Auscultation.**—The child's heart is heard beating through the ab-



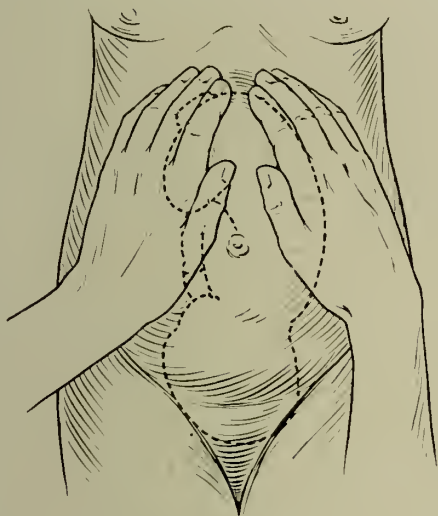


FIG. 1.—FUNDAL GRIP.

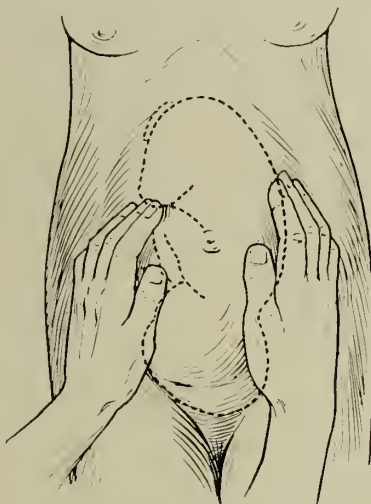


FIG. 2.—UMBILICAL GRIP.

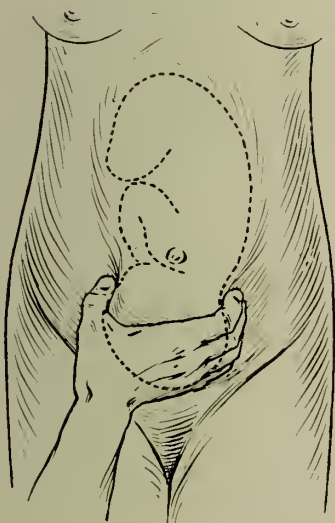


FIG. 3.—PAWLIK'S GRIP.

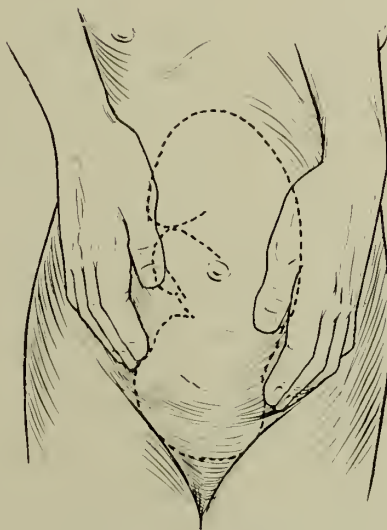


FIG. 4.—PELVIC GRIP.





dominal wall, like the ticking of a watch under a pillow. It is heard most easily when the child's back is turned to the front. The liquor amnii conducts the sound, so that it may be heard in several places, but the point of greatest intensity is of importance. This, in the first position of the vertex, is midway between the umbilicus and the anterior-superior spine of the left ilium. In the second position it is on the right side, but somewhat more to the front. In the third and fourth positions it is generally in the flank, and in breech positions it is at the level of the umbilicus, or slightly above.

Care must be taken to feel the mother's pulse while counting the foetal heart, as it is easy to mistake the rush of blood in the maternal arteries, called the uterine souffle, for the foetal heart. The souffle keeps time with the mother's pulse; the rate of the foetal heart is from 120 to 140 beats in the minute. The foetal heart is slightly slower in male than in female children. If the beating is slow, faint, or tumultuous, it is a danger sign for the child.

**Abdominal measurements.**—With a flexible inch measure, the midwife should take the greatest girth of the abdomen, about the level of the umbilicus. In a normal case, at full term this will be about 36 inches, and is termed the *circumference*. A measurement much over this suggests excess of liquor amnii, twins, or a very large child, unless it can be put down to excess of fat. The next measurement is the *convexity*, from the symphysis pubis to the fundus, which should measure 13 inches. If it measures 15 inches, except in the case of excessive liquor, or fat, etc., the part will not have engaged.

**Intercristal and interspinous diameters.**—The external measurements of the bony pelvis can only be taken with a pelvimeter, and although a cheap folding one is now made, it is not every midwife who possesses one. The distance between the spines and the crests of the ilium should, however, always be roughly estimated by laying the thumb on the anterior-superior spine and the forefinger on the crest. If this manœuvre is frequently made in different cases, an idea can be formed as to whether there is an inch between these two measurements. The intercrystal diameter is 1 inch larger than the interspinous diameter in all well-made pelves; it is easy to see from the direction of the finger and thumb when so placed whether this is so. In some extremes of contraction one can see that the intercrystal diameter is even the smaller of the two.

It must be remembered that by external measurements we can never arrive at the exact internal condition ; there may be thicknesses of bone, or even tumours, which may alter the true diameters, and which we are unable to discover ; but by pelvimetry we often obtain useful information, which suggests to us that the patient is abnormally small or deformed, and so puts us on our guard. When called to a patient at full term, the essential point is to estimate if the child fits the pelvis ; the pelvis may be small, but the child may be small also. The most valuable method of judging this is the pelvic grip applied to the presenting part, as already described. It is when seeing a primipara, perhaps three months before labour, that the external measurements are of such great importance.

**Pelvimetry.**—The first measurement taken is the interspinous, which should measure about 10 inches. The patient being on her back,



Fig. 105.—MEASURING THE DIAGONAL CONJUGATE.

the midwife, holding the arms of the pelvimeter between her finger and thumb, measures the spines and reads off the figures. She then repeats the movement with the crests, at a point taken about 2 inches back from the spines. The intercrystal diameter is about 11 inches. The bi-trochanteric diameter is taken from one trochanter to the other. Turning the patient on her side, the external conjugate is taken, by putting one arm of the pelvimeter at the depression below the last lumbar

vertebra, and the other arm in the middle of the upper border of the symphysis pubis. This depression is often difficult to find. It occurs 1 inch above an imaginary line running between the posterior spines.

From the measurement thus taken, which should be  $7\frac{1}{2}$  inches, we must subtract  $3\frac{1}{2}$  inches in order to infer the true conjugate.

**Diagonal conjugate.**—When the patient is unable to see or refuses to consult a doctor, and the midwife, after making her other examinations, suspects contraction, she may take the diagonal conjugate (Fig. 105), or measurement from the lower border of the symphysis pubis to the sacral promontory, this being  $\frac{1}{2}$  inch larger than the true conjugate. The patient should previously have been given an enema, and have emptied her bladder. She must be placed on her back across the bed in the lithotomy position, with the buttocks at the extreme edge. The midwife, having disinfected her own hands and the patient's genitals in the way to be described further on, will introduce the first two fingers of the left hand into the vulva. Having passed them up as far as possible, feeling her way up along the curve of the sacrum, she must drop her elbow and endeavour to reach the sacral promontory with the tip of her second finger. If she succeeds in doing so she may be fairly certain that there is some measure of contraction, as a woman's fingers are rarely long enough to reach the promontory in a normal conjugate. To ascertain the degree, she should mark the point where the pubic arch crosses the left hand, and measure with an inch tape from there to the tip of the finger, afterwards deducting  $\frac{1}{2}$  inch, and so arriving at the true conjugate.

#### VAGINAL OR INTERNAL EXAMINATION

Vaginal examinations carried out without strict attention to anti-septic details are one of the most common causes of puerperal fever, of which thousands of women still die yearly in this country. If a midwife, on arriving at a case, finds abdominally that the child is presenting by the vertex, and the pains are good and regular, there will probably be no need for her to make a vaginal examination, and she should carefully note that she has not done so in her book. There are occasions, however, when a vaginal examination cannot well be dispensed with, and it is therefore necessary for a midwife to understand how to conduct one with the greatest measure of safety to the patient. It is a wise precaution to wear an indiarubber glove or finger-stall with apron, which has recently been boiled and cooled down in perchloride of mercury lotion, 1 in 1,000. This should always be done if the midwife has had the slightest rise of temperature in any of her other patients.

**Disinfection of genitals.**—Before a vaginal examination is made, the

patient's genitals must, as far as possible, be disinfected. The midwife must scrub her own hands and forearms (the nails being kept absolutely short) with a recently boiled nail-brush for three minutes by the clock, and soak them in perchloride of mercury, 1 in 1,000, for two minutes. She should then lather the whole pubic region well with soap and water, to which lysol or cyllin has been added (20 minims to the pint), cutting off the hair with aseptic scissors and streaming down lotion, preferably perchloride of mercury, 1 in 1,000. She will use absorbent wool sponges or pledgets of carbolised tow for this purpose, and one of them soaked in the same lotion will be left inside the labia while she proceeds further to disinfect her own hands.

**Disinfection of hands.**—These must again be scrubbed for five minutes in fresh water, which should, if possible, be changed by an attendant during the process, the soap being rinsed off by a stream of clear water.

**The examination.**—After again soaking her hands in the lotion for three full minutes, the midwife will push back the bed-clothes with her elbow, remove the vaginal sponge with her left hand, and separating the labia widely with the same, cautiously introduce the forefinger of her right hand, taking the utmost care not to touch anything on the way in, and also not to hurt the patient unnecessarily. No grease of any kind is to be used: the finger, being wet with the lotion, will glide quite easily without it, and the lubricant constitutes a danger in itself. If the finger comes in contact with the bed-clothes, patient's thigh, midwife's apron, or anything else, the full five minutes' scrubbing and three minutes' soaking must be undertaken again from the beginning, or the midwife will have subjected her patient to the risk of a dreadful illness and death through her own carelessness. While the first finger of the right hand is in the vagina, the left hand must invariably make firm pressure on the abdominal wall, so that the whole foetus is held between the two hands.

The points to be ascertained by vaginal examination are as follows: Firstly—before the finger is introduced—by **inspection**. The vulva should be examined for varicose veins (which may possibly rupture during labour) and for cedema (indicating either abnormal pressure or a tendency to albuminuria and eclampsia). The presence of warty growths round the anus, or flat sores should be noted, as they indicate syphilis and demand that special care should be taken to prevent infection of the nurse's hands.



The examining finger will ascertain in its progress :—

1. **Condition of the rectum**, whether empty or loaded.

2. **Condition of the vagina**, whether moist and dilatable, as in a favourable labour; dry and cool, as it is before labour begins; or dry and hot, with throbbing arteries, as it becomes in obstructed labour. Its size may be lessened by the sagging of the front and back walls of the vagina. If accentuated by a loaded bladder or rectum, the condition is called respectively cystocele and rectocele.

3. **Condition of the cervix**.—This may be quite unshortened, and feel like the smaller end of a pear with a dimple at the tip—the external os. In this case labour has not begun, and the pains may be classed as false pains. It may be shortened to a mere trace, in which case labour is probably just beginning.

4. **Condition of the os**.—The os may be thick and rigid, if not pressed upon evenly by the bag of membranes, or soft and dilatable. Its size must be specially noted—the terms used to express it are commonly the names of coins: a sixpence, a shilling, a half-crown, five-shillings. After this there is only a border of os all round the presenting part, usually called “lip all round,” giving the impression of the edge of a teacup. Of this border, the posterior margin is the first to be drawn up, leaving the anterior lip or edge only. When this, too, has vanished, and the membranes completely fill the vagina, the first stage is over.

5. **Condition of the membranes**.—Note whether the bag has formed, or whether the membranes have ruptured. Note also the shape of the bag, whether that of a watch glass, as in normal cases, or a long, elongated pouch, as in obstructed labour.

6. **The presentation**.—The presenting part, whether a portion of the child, as the vertex, face, breech, or shoulder, or the placenta or funis; whether still freely movable or fixed, and the depth to which it has descended along the birth canal. Note also the size of the presenting part: whether large or small, and if the vertex, whether the head be hard or soft.

7. **Position of the presenting part**.—This is sometimes obscured by the caput succedaneum, which is usually not formed until after the rupture of the membranes. A large caput is a sign of obstructed labour. In diagnosing the position vaginally it must be remembered that the part upon which the examining finger first impinges is the one that lies anteriorly, or to the front of the mother.

## CHAPTER XLIII

### THE PUERPERIUM

Condition of the Patient after Labour—After-pains—Temperature—Pulse—Respirations—Sleep—Care of the Genitals—Lochia—Bladder—Uterus—Food—Aperients—Care of the Breasts—Cracked Nipples—Mammary Abscess—Getting Up.

THE care of the patient during the puerperium is not the least part of a midwife's duty. It is only second in importance to the care given during labour itself, and it extends over a very much longer time. The puerperium is, properly speaking, the period extending from the close of the third stage of labour to the moment when the uterus has returned to its normal dimensions. Its duration is six weeks or more. The patient will not, however, be in need of the midwife's attendance all that time, and for practical purposes the normal puerperium is held to consist of the ten days following labour.

Nature has to accomplish several important processes during this period of convalescence. She must repair all the abrasions, bruising, and lacerations which may have been caused by the passage of the child through the birth canal; she must permanently close the mouths of the gaping blood vessels at the placental site, and heal the large open surface or wound which is necessarily laid bare by the delivery of the placenta; the uterus must so retract and become absorbed that from measuring 12 inches by 9 inches and weighing 2 lb. immediately after labour, it becomes again a small organ measuring  $3\frac{1}{2}$  inches by  $2\frac{1}{2}$  inches, and weighing only 2 oz., at the end of six or eight weeks. This process is termed involution.

And, further, the maternal organism has to develop an entirely new function, that of lactation, and in doing so it must not only produce from its own resources a nourishment suited to the little new life, but also adapt the breasts and nipples to the work thrust on them. If anything is allowed to interfere with Nature's action in these particulars, the following conditions may arise:—

1. Sepsis, either local or general, from the unhealthy condition of the wounds.

2. Sub-involution, or a permanently enlarged and heavy uterus, causing prolapse and other future troubles.

3. An insufficient supply of milk, obstructed milk ducts, cracked nipples, and inflammation of the breasts, known as mastitis, which may or may not go on to suppuration.

**After labour.**—The condition of the mother, when the third stage with its necessary ablutions is over, is one either of exhaustion or of over-excitement. She will be liable to a shivering fit, from the cessation of effort, the loss of the child and placenta, and possibly from exposure, and she will not infrequently suffer from after-pains. Her temperature will probably be slightly raised, pulse between sixty and seventy, respirations lowered. The attendant must cover her warmly, put a hot bottle to her feet, and insist that she shall lie still without talking, the room quiet and not too light, the window open. She should be given some milk to drink, and be encouraged to sleep.

**After-pains.**—After-pains should not be severe if the third stage has been well managed; if troublesome, they will probably be due either to a full bladder, which should be relieved, or to the presence of clot, which should be expressed after the uterus has been well rubbed. Liquid extract of ergot,  $\mathfrak{zj}$ , should be given after the latter treatment, to promote retraction. In cases where the mother has suffered before from sub-involution, after-pains may be more severe than usual; but as a rule, abnormal severity will indicate the retention of some portion of the membranes or placenta, and it is wise to consult a doctor when it occurs.

The daily care of the patient will include attention to the following points:—

**Temperature.**—This should be normal after the first slight rise during labour, and usually remains between  $98^{\circ}$  and  $99^{\circ}$  F. throughout the lying-in. Occasionally on the third day the secretion of milk and consequent tension may raise it to nearly  $100^{\circ}$  F. If the patient is not properly managed, there may be other slight elevations of temperature from constipation, indigestion, or caked breasts later in the puerperium, as well as from the more serious cause of septic infection.

**Pulse.**—The pulse-rate will normally continue to diminish from the time labour is over, when it should be between sixty and seventy,

till about the eighth day, when it may reach fifty or even less. This should be carefully borne in mind, as a quick pulse will mark an even greater departure from the normal than it appears to do. A rapid pulse soon after labour may be the first symptom of secondary hæmorrhage ; a day or two later it may mark the onset of sepsis. The pulse-rate after chloroform is usually higher than is the case after a normal labour.

**Respirations.**—These should be carefully taken night and morning, as if quickened they are often a sign of impending disaster.

**Sleep.**—After the not infrequent sleeplessness of the latter part of pregnancy, it is usual, and most desirable, for a woman to sleep more than at other times. If she is nursing her baby, her rest will of necessity be broken, and therefore it is particularly advisable for a lying-in patient to devote the afternoon, as well as the night, to repose. The house should be kept quiet, and visitors discouraged. An abnormal wakefulness may betoken an irritable condition of the brain, and be a premonitory symptom of puerperal mania.

**Care of the genitals.**—The patient should be bathed several times a day, and always after an action or the passage of urine, if her nurse is with her. It will be obviously impossible for a district midwife to accomplish this, and she should not encourage the patient's friends to undertake the office. She must herself bathe the patient daily, if possible twice a day, for the first three days, first scrubbing her own hands with a nail-brush kept for the purpose, and soaking them in perchloride of mercury, 1 in 1,000, for a whole minute.

The external genitals and inner surface of the thighs should be well lathered with clean soap and water (fresh pledgets of cotton-wool being used), and perchloride of mercury, 1 in 1,000, should be streamed down, both outside and inside the labia. If abrasions are present, boracic lotion should be substituted, made with sterilised water, and the abrasions powdered with a mixture of boracic powder 2 parts, and iodoform 1 part. A light dressing of gauze is advisable for serious lacerations, but care must be taken not to plug the vagina with it, as lochia will rapidly decompose if pent up and not allowed free passage.

**Lochia.**—This must be carefully observed daily. The continued passage of clots will indicate sub-involution, and possibly retained membranes. It usually changes in colour, and becomes markedly less after the first few days.

Offensive lochia may indicate sapræmia from retained products.



A sudden cessation of the flow during the first week is a very alarming symptom, and may herald the onset of septicæmia.

**Bladder.**—This is very tolerant after labour, the muscles being often paralysed by the pressure to which they have been subjected. The patient should be encouraged to pass urine by an abundance of hot milk, water, etc., and if necessary by fomentations, the sound of running water, and light pressure over the bladder. If still incapable of doing so, the catheter should be used, but with every possible precaution, as the ordinary risk of giving cystitis by the passage of germs into the bladder is greatly increased by the flowing lochia. Either a glass or soft rubber catheter may be used, having previously been boiled for five minutes, the latter causing the least inconvenience to the patient. Pressure should be made over the bladder, and at either side, to ensure that it is completely emptied. The patient should meantime be protected from chill, by a folded blanket across the chest, and another over each leg.

**Uterus.**—To ensure good retraction the fundus must be rubbed for five minutes night and morning; its height above the pubes must then be taken by means of a wooden inch measure. This can only be done when the bladder is empty. The fundus, starting at five or six inches above the pubes, should sink nearly half an inch daily, and disappear below the pubic bone on the twelfth day.

**Food.**—The patient should be restricted to milk and gruel, with a little tea and bread and butter, milk puddings, and a lightly boiled egg for the first two days of the puerperium, and until the bowels are open. As much as from one to two quarts of milk should be taken daily at this time. Broth and soup may also be given, if not greasy, and if there is no albuminuria. After the first aperient has acted a more or less ordinary diet can be adopted, as long as the more obviously indigestible articles of food are omitted, such as pork and pastry. Green vegetables are apt to give colic to the baby if it is fed at the breast; boiled onions are very valuable, as their use will often obviate the necessity for medicine. Baked apples may be given, and bananas, but no sour fruit, such as plums and unripe grapes. It is a mistake to over-feed a lying-in woman, but she will require food at frequent intervals if she is nursing the baby; gruel and cocoa, made with milk, are especially helpful in increasing the secretion.

**Aperients.**—Either liquorice powder ʒij, or castor oil ʒjs, may be



given, forty-eight hours after labour, and the bowels should then be made to act daily, either with medicine or with enemata. Epsom salts may only be given when it is necessary to wean the baby, either wholly or for a short time.

**Care of the breasts.**—This is one of the most important points during the puerperium, as lactation is too often connected with a mammary abscess. When the milk first comes in it is common for the breasts to be much engorged, and occasionally with a primipara there will be actual pain, and rise of temperature in consequence. They will appear tense and hard, and so swollen that the baby cannot easily take the nipple, so that he becomes discouraged, and the natural relief is delayed. In these circumstances skilful massage is of the greatest service, but ignorant and blundering rubbing and kneading may do considerable damage. The breasts must always be fomented first, the fomentations being renewed several times, and if the nurse has not been shown how to do the massage, she will be wiser to content herself with using a breast-pump.

**Cracked nipples.**—The next trouble that may occur is that the nipples will become exceedingly tender with the repeated application of the baby's mouth ; if not attended to at once, they may even develop cracks and bleed, thus opening a direct passage for germs, and subjecting the patient to a serious risk of mammary abscess. At the first tenderness, a nipple glass should be used until the skin has completely hardened ; the glass must be boiled beforehand, especially if it has ever been used by another patient ; it must be kept covered over, in clean cold water, the glass separated from the indiarubber.

Compound tincture of benzoin (friar's balsam) and glycerine of tannic acid are very good applications where cracks have actually occurred ; they must be washed off before the baby is put to the breast.

The best preventive of sore nipples is, however, repeated washing ; a careful monthly nurse will sponge them with cotton-wool and warm water before and after each nursing, and although this is not possible for district midwives, something can be done by educating the mothers, and by only washing them with quite clean water and drying them with clean rag or wool, not the ordinary towel. After lactation is fully established other difficulties may occur. There may be insufficient milk, in spite of the breasts appearing round and well shaped, and the milk running away. If gently pressed by the thumb and forefinger, they

will be found to collapse, instead of offering resistance ; in these cases the baby will often suck so furiously as to cause a crack, usually at the base of the nipple, and the apparent roundness often blinds the attendant to the real trouble.

**Mammary abscess.**—The worst disorder that can attack the breasts is the inflammatory condition known as mastitis, which frequently goes on to suppurative mastitis, or breast abscess, although prompt treatment may avert the latter calamity. The symptoms in either case are pain, redness (probably in some particular spot), and a rise of temperature. As soon as these occur the baby must be fed by hand, and the breasts rested until the symptoms have entirely disappeared. They must have a firm compression bandage, and if possible ice pads, which are by far the best means of preventing suppuration. If real ice bags are not to be had, the crushed ice can be tied up in jaconet. Boracic fomentations are sometimes preferred to the cold method, but they are less effectual. The patient must be put on light diet, not too fluid, and given Epsom salts 3j every hour until they act. If at the end of twenty-four hours the pain, redness, and temperature have all completely disappeared, the patient may again be allowed to nurse the baby if she is anxious to do so ; if they are still present, a doctor must be called in, as probably pus has formed. Prompt incision may prevent its increasing and burrowing until an enormous abscess has to be dealt with, taking several months to heal.

**Getting up.**—It would be wise in most cases if a patient could stay in bed for a full fortnight after the birth of her child ; with working women, it is as a rule quite impossible for them to take longer than ten days' complete rest, but the midwife should be firm that in certain cases they must take the fortnight or even three weeks. These are where there has been much hæmorrhage, extensive lacerations, a prolonged rise of temperature from whatever cause, or sub-involution. Properly speaking, the patient ought not to leave her bed until the uterus has disappeared behind the pubes. At the various steps towards convalescence, either sitting up in bed or getting out of bed, there may be a tendency to anæmia of the brain or faintness. The treatment is, of course, the usual one—*i.e.*, to make the patient lie quite flat, removing her pillow, and to open the window. Brandy must on no account be given.

## CHAPTER XLIV

### ANTISEPTICS—PUERPERAL SEPSIS

Antiseptics: Semmelweiss's Discovery—Asepsis and Antisepsis—How a Woman in Labour may be Infected—Germs Conveyed by the Attendant—Germs Originating from the Patient—The Gonococcus—Disinfection of Appliances—Disinfectants. Puerperal Sepsis: Sapræmia—Septicæmia—Pyæmia—Periçnitis—Pelvic Cellulitis—Phlebitis—Phlegmasia Alba Dolens—Disinfection.

#### I.—ANTISEPTICS

THE subject of germs or micro-organisms has already been dealt with in this work,\* and here it is sufficient to say that of those connected with disease, some live and feed on living tissue, and are called *parasites*; others live on dead tissue, and are called *saprophytes*. The bacteria important to midwives are the *Streptococcus pyogenes*, the *Staphylococcus pyogenes aureus*, the *Bacillus coli communis*, and the gonococcus. The first and second micro-organisms produce pus, the third is found in great numbers in all fæcal matter, the fourth is connected with the specific disease called gonorrhœa.†

**Semmelweiss's discovery.**—The fatal results produced by the introduction of pathogenic germs into the system of a woman in labour were first discovered by an Austrian doctor of the name of Semmelweiss, who was born in 1818. He was made assistant house surgeon in the maternity department of a large general hospital in Vienna, which was at that time divided into two sections, one of them attended by medical students, the other by midwives. It was generally recognised that the mortality on the students' side was enormously greater than that on the midwives', so that women when they found themselves in the former section begged to be sent out again, even if they had to be delivered in the streets. But no satisfactory reason had been shown for this difference until Semmelweiss pointed out that the students frequently came to the labours straight from the post-mortem and dissecting-room, after merely washing

\* See Chap. xiv., Vol. II., p. 48.

† See also Vol. II., p. 57.

their hands with soap and water. The conclusion he deduced was that the students brought in something on their apparently clean hands from the dead bodies which caused the death of the lying-in women. He instituted the use of the solution of chlorinated lime, a crude but powerful disinfectant, and had the satisfaction of finding at the same time that his theory was proved and the mortality greatly reduced.

Other names which shine out in the history of antiseptics are those of Pasteur and Lister, who by their indefatigable researches threw further light upon the life history of germs, and gradually proved which antiseptics had the greatest germicidal properties, and discovered the best means of applying them.

Germs require favourable conditions of food, warmth, and moisture in which to flourish. They are killed by boiling or great excess of cold, but the warmth and moisture of the human body suit them well, especially where there is a raw surface, or in cavities such as the eye, mouth, vagina, or rectum, which are never perfectly dry.

To ensure their happiness, however, germs require also suitable food, and this a large number of them find in dead tissue; if, therefore, these parts become in any measure devitalised—as is the case with the bruising and abrasions caused by labour—the well-being of the micro-organisms is assured, and they flourish exceedingly, at the expense of the patient.

A suitable environment will also be afforded to these saprophytes by the retention of any part of the placenta and membranes, and the septic condition occurring from this cause is known as *sapræmia*.

Even where there is no dead material present, labour inevitably produces a large raw surface at the placental site. There will probably be no germs there in the first instance, as the cavity of the uterus is not in direct contact with the outer world; the *Bacillus coli communis* from the fæces, possibly the gonococcus from the vagina, saprophytes from a tiny suppurating wound on the midwife's hand, or, worse still, the deadly streptococci, which the latter may bring with her from an already septic patient, can be and often are pushed up by the examining finger or vaginal nozzle through the protecting sheath of the vagina into the place of danger. The lymphatic system is at its most active after labour, since in addition to its usual duties it has to absorb an enormous weight of extra material from the uterus; the vital forces of the woman are at a low ebb, especially if she has lost much blood, and are therefore less



adapted than usual to resist attack from micro-organisms. It is a combination of these causes which makes puerperal septicæmia—puerperal fever, as it used to be called—one of the most deadly and most rapid of diseases.

In general surgery, antiseptics have been to a large extent superseded by *asepsis*; that is to say, that wherever surgeons have to do with a clean wound made by themselves through unbroken skin in the course of an operation, they no longer flush the raw surface with strong lotions in order to kill the germs that may be present, but by elaborate preparation beforehand of the patient's skin and all appliances used, including the rubber covering to their own hands, seek to eliminate the possibility of germs being present, and flush the wound only with sterilised saline solution, or merely sterilised water.

**Aseptic or antiseptic midwifery?**—From the circumstances of the case, it is absolutely impossible that complete asepsis should be practised in midwifery, and the use of antiseptics is therefore still imperatively necessary.

It may be possible to disinfect a portion of an arm or an abdomen, and to maintain the condition during the one or two hours of an operation. It is an entirely different matter when one has to deal with the folds of the vagina, and that in perhaps a labour lasting for twenty-four hours, during which the patient must exercise her natural functions. The midwife, therefore, must omit no possible precaution, and must hold firmly to her antiseptic solutions. We have seen that there are several ways in which a woman in labour may become infected, and for convenience sake we will divide the precautionary measures to be taken into two different sections.

**1. Germs conveyed by the attendant.**—No midwife must attend a labour if she has any sort of discharge—whether from nose, ears, suppurating wound or burn, ulcerated leg, abscess of the mouth, or any other variety, since all discharges teem with poisonous germs. She must on no account undertake a case if she has been in contact with any puerperal sepsis, erysipelas, or any other disorder of a violently septic nature. If her work compels her to dress ordinary wounds, as well as to undertake maternity cases, or if one of her other patients has a slight rise of temperature, she should perform all offices to the clean patient in recently boiled rubber gloves.

She must wear no clothing that is not frequently washed, and her



dresses must be of cotton, the sleeves buttoned up to the elbow, so as to roll right up. Rings on the fingers must never be allowed. A perfectly clean apron and upper white sleeves, reaching from shoulder to elbow should be worn, and carried to each case in a clean piece of paper, *not* worn under the cloak. She must have a warm, cleansing bath daily, and keep her nails quite short, so that they may furnish no shelter for germs. She must always keep her teeth in good order, have them properly attended to if decayed, and remember not to breathe close on to the patient's uncovered genital organs, as the saliva is always full of germs which may be deposited by the breath.

Having carefully studied all these personal details beforehand, she will give her full attention to the surroundings of the patient. She will make searching enquiries as to her past labours, whether she got on well afterwards, and, if not, whether she is now using the same mattress. If so, it must be unhesitatingly rejected, and another substituted, or even sacks stuffed with straw, if another is not forthcoming. No mackintosh must be used unless perfectly new from the shop. They are often lent round from patient to patient, and are a fruitful source of infection. For the same reason a bed-pan must not be used unless the midwife has herself seen it boiled in the copper. The draperies on and round the patient must be the cleanest procurable, and not of flannel, since that will not boil. The disinfection of the patient's genitals and of the midwife's hands has already been given in detail (pages 161-62).

**2. Germs originating from the patient.**—We have seen that these may be present from a variety of causes. If the perineum is allowed to remain soiled with fæces, or with mucus extruded from the rectum, the examining finger may push the *Bacillus coli communis* up before it into closer proximity to the placental site; moreover, if the perineum tears before the on-coming head, there is grave danger that the germs then lying upon it will enter the blood stream at the place of the laceration.

The patient may have suffered from a gonorrhœal discharge, and if so her vagina will already contain the gonococcus. An ante-partum douche should be given in such cases for the sake of the baby's eyes, as otherwise it will run grave risk of gonorrhœal ophthalmia. Vaginal examinations should be avoided in these cases, if possible.

Whenever there are retained products they may be invaded by saprophytes, and this is one of the commonest sources of infection. The midwife must guard against the danger by the proper conduct of the

third stage of labour, and she must remember that a considerable loss of blood will so lower the patient's vitality as to cause a great predisposition to sepsis.

It must also be borne in mind that the risks are by no means over at the conclusion of labour. The genitals must be kept scrupulously clean, and the pads frequently changed, as under the most favourable circumstances the lochia always decomposes slightly after the first few days. For this reason the midwife must never insert her finger into the vagina during the puerperium.

Scrupulous care must be taken not to handle the breasts, except with clean hands, wool, and towels, as the nipples afford an open door to germs the moment there is the least erosion or soreness.

The danger of sepsis is enormously increased by stuffy rooms and closed windows.

**The gonococcus.**—With regard to the child, the principal micro-organism to be feared is the gonococcus, which may attack the eyes. These must, therefore, be wiped quite clean as soon as the head is born, and before they open. In any case where the mother has suffered from any kind of vaginal discharge during pregnancy, it is advisable to put one drop of nitrate of silver solution into each eye within an hour of birth. The strength should be 8 grains to the ounce.

The umbilicus is a spot through which micro-organisms not infrequently enter the child's system, and which, therefore, requires great care. The germ of tetanus, which lives in earth (fuller's earth as well as the more ordinary kinds), has made many victims. All abrasions of the skin occurring at the time of delivery should be disinfected and a dressing applied.

**Disinfection of appliances.**—By far the best means of sterilisation is by boiling; few germs will survive a five minutes' quick boiling, fewer still ten minutes', practically none an hour. There are, however, some things besides the midwife's hands which are injured by being treated in this manner, such as the gum elastic of bougies and the sharp edges of cutting instruments. All other steel instruments, and all glass and soft rubber, should be boiled; also all chamber utensils and bed-pans.

**Disinfectants.**—The disinfectants most used in midwifery are as follows:—

1. *Perchloride of mercury*, also called hydrargyri perchloridum and corrosive sublimate.—A solution of this is the best to use for the hands and for bathing

purposes, at a strength of 1 in 1,000. For abrasions it should be made weaker, about 1 in 2,000.

The disadvantages are that it blackens instruments, and is extremely poisonous, not only when taken by the mouth, but also if absorbed by a large, raw surface.

A patient who has absorbed an excess of perchloride of mercury will suffer from colic, diarrhœa, excessive salivation, loosening of teeth, and spongy gums. The doctor must be summoned if these symptoms arise. In a case where the poison has been taken by the mouth the midwife, while awaiting his arrival, must persuade the patient to drink as much of the beaten whites of egg and water as possible.

Perchloride of mercury forms a chemical combination with either blood, pus, or soap, which impairs its disinfecting properties. For this reason the hands must always be rinsed from soap after scrubbing, in clean water, and the lotion must be changed if altered by blood.

Perchloride of mercury should not be used for douching unless ordered by the doctor. It is best then at a strength of 1 in 3,000 and at a temperature of not less than 115° F. (120° F. for hæmorrhage), the heat preventing absorption.

This disinfectant is sometimes used for babies' eyes, at a strength of 1 in 4,000. It must never be employed with or after nitrate of silver, as the use of two such strong applications is not only unnecessary, but dangerous, and has been known to destroy eyesight.

2. *Lysol*.—This is a most valuable addition to the water used in scrubbing one's hands, and for lathering the patient's genitals, strength  $\frac{1}{2}$  drachm (30 minims) to the pint. It should never be relied on to the exclusion of perchloride of mercury. It is valuable for douching at the strength just given, but should be used only with sterilised water. It can also be used for instruments, strength 1 drachm to the pint.

3. *Creolin*, or *Cyllin*, can be used for the same purposes as lysol, and at the same strength. It is rough and less agreeable than lysol, but also much cheaper. It is especially valuable in gonorrhœal cases.

4. *Carbolic acid* is not much used for the hands, owing to its roughening properties. It is usually kept in a stock solution of 1 in 20, to which boiling water must be added and the whole well stirred. It is then valuable for instruments *which have previously been sterilised*, and may be used, if nothing else is at hand, both for hands (1 in 40) and vaginal douching (1 in 60). If used for douching, the carbolic must be mixed in a jug before being poured into the douche can.

5. *Phenol*, or *pure carbolic acid*, is the antiseptic from which carbolic acid solution is made. The cheapest form is in a bottle of crystals, which can be melted by placing the bottle in an instrument saucepan and bringing the surrounding water to the boil. It can be kept in the fluid state by adding 1 ounce of hot water to 10 ounces of the dissolved crystals. In this liquid form it is valuable for disinfecting those instruments which would suffer from boiling, and it can be used again and again if the instruments are clean before their immersion, which should last for three minutes. Pure phenol destroys the skin, and must not be allowed to come into contact with it. This liquefied phenol (*Acidum Carbolicum*

*Liquefactum*) is the one from which solutions of 1 in 20 and 1 in 40 are prepared—one part of the carbolic being taken to 19, or 39, parts of water.

6. *Boracic acid* is absolutely valueless for disinfecting hands, but it is still a useful though very mild antiseptic. As it is not poisonous, it can be used to soak wounds for long periods, and also to wash out cavities such as mouth, nose, ears, bladder (in cystitis), rectum (when nutrient enemata are given constantly). It is also quite invaluable for all eyework, as it is a bland and non-irritating antiseptic. It must always be made with sterilised water. Cold water has the power of absorbing boracic acid to the strength of 1 in 30 if left in contact with it for an hour or two. It is then called a saturated solution, as it will take up no more, however many crystals are added to it. Roughly speaking it is well to mix an ounce to the pint, to ensure saturation. The cheapest way to make the lotion is to buy the crystals. If used for douching after labour, the crystals themselves should have been subjected to a boiling process, as impurities are often mixed with them.

7. *Iodoform* is a strong-smelling powder, dealing not so much with the germs themselves as with their products, or ptomaines. It is therefore very valuable for application to abrasions of the vulva or vagina, a day or two after they have occurred, or to sloughing perineal stitches, and can be mixed with equal parts of boric acid powder. It can also be applied to the unhealthy umbilicus of an infant.

8. *Iodine* is a non-irritating antiseptic, sometimes ordered for douches at a strength of 1 drachm to the pint. It is very staining to bed-clothes, but the stain can be removed by the immediate application of a little 1 in 20 carbolic.

Condy's fluid, made from permanganate of potash, is too weak a disinfectant to be used in midwifery.

For disinfecting drains, crude (rough) carbolic, chlorinated lime, and green copperas can be used, and are usually supplied free by the local sanitary authorities. Boiled salt and water has a mildly antiseptic property, and so has glycerine.

## II.—PUERPERAL SEPSIS

The causation of puerperal sepsis has been described in the last chapter, together with the best methods of prevention. We have now to consider the illness itself with its symptoms and management. It cannot be too often emphasised that it is, nearly always, a preventible malady, and that even if a midwife believes that she has faithfully carried out all her precautions, the fact of its occurrence should make her carefully review every detail of her work, reading up the subject again to see if there has been a lapse either in her knowledge, practice, or forethought. By this means she will do her utmost to prevent a recurrence of the calamity, and, above all, to avoid spreading the contagion to other patients.

**Varieties of puerperal sepsis.**—Puerperal sepsis may be roughly divided into four classes:—



1. Sapræmia, or Septic Intoxication.
2. Septicæmia, or Septic Infection.
3. Pyæmia, a chronic septic condition.
4. Phlegmasia Alba Dolens, or White Leg.

The four classes are not really distinct types, as one often leads on to another, and the same kinds of micro-organisms may be found in all ; but still each class has certain prevailing characteristics, which more or less differentiate it from the others.

#### I. SAPRÆMIA

The infection is produced, not by the microbes themselves, but by the poisonous products of toxins manufactured and left by them. As we have seen, saprophytes are the micro-organisms which feed on dead tissue, and they may grow in the lochia, especially if pent up and decomposing in uterus or vagina, or in a piece of retained membrane or placenta. A wound of the vagina or vulva which has been allowed to slough may also become suitable soil for them.

**Symptoms.**—The symptoms usually make themselves known between the third and sixth day. The temperature rises, and may be between  $100^{\circ}$  and  $103^{\circ}$  F. ; pulse from 100 to 120 ; respirations quickened. The patient will probably complain of headache and look flushed, the lochia will be offensive, the uterus larger than normal and tender to the touch. The attack may be preceded by a rigor. It is very rare that all the symptoms of this or any other variety of sepsis are found simultaneously, and the unwary are often deceived by this fact, their great anxiety to prove that the patient is not septic leading them to attach undue weight to the absence of any one of the series. A midwife is not desired to diagnose exactly what is the matter with the patient ; the rules demand that she should summon a doctor when the temperature has been as high as  $100.4^{\circ}$  F. for twenty-four hours, in conjunction with a quickened pulse ; but she will do well to use common sense and not wait till this outside limit has been reached, if the patient shows a combination of any of the above symptoms.

**Treatment.**—Sapræmia, as a rule, if detected early enough, yields very promptly to treatment. If the patient is taken ill on the morning of the third day, and the doctor immediately explores the uterus and removes the decomposing material, flushing it all away with an intra-uterine douche, it is highly probable that within twenty-four hours the



symptoms will have abated, and she will be almost as well as if it had not occurred. (A rigor, with rise of temperature, often occurs soon after the exploration, so that undue anxiety need not be felt at this occurrence.) The doctor will probably order vaginal douches twice a day, to keep everything sweet. The patient must be kept on light diet rather longer than usual, with a free use of aperient medicine. If daily douches of perchloride of mercury are ordered, a strict watch must be kept for symptoms of poisoning.

In cases where *sapræmia* has not quickly been diagnosed, and where day after day passes with some new and far-fetched reason given for the indisposition, the course is not, as a rule, so favourable; a *septicæmic* or *pyæmic* condition may set in and the illness terminate in death.

If the temperature has not been very high, and the other symptoms are slight, it is possible that the midwife may be allowed by the doctor to continue attending her other patients while she is still nursing the *sapræmic* case. In that event she will need to exercise the strictest precautionary measures if she is to avoid spreading the infection. Having first visited the others, she must take off all her clothes and change into some kept for the purpose before attending the septic patient, keeping rubber gloves on her hands throughout her manipulations, even when she makes the bed. Before entering the room, she should remove her cloak and bonnet, and put on a handkerchief cap which completely covers the hair. She must keep a separate bag for the case (disinfecting it thoroughly on the recovery of her patient), and on her return home she should take a bath, scrub, and disinfect her hands for ten minutes and return to her other clothing. These measures are, it must be admitted, exceedingly irksome; but if the midwife has once read an account of an epidemic of puerperal fever, in which the germs have been carried round on the hands of the attendant, spreading death and disease broadcast, she will not grudge the trouble.

## II. SEPTICÆMIA

If the midwife should be so unfortunate as to have a case of *septicæmia* or *pyæmia*, her course will be quite different from that just indicated. Having called in the doctor and reported that she has done so, giving her reason, to her local supervising authority, she will await their decision whether to devote herself entirely to the septic patient, or to leave her to others, and after thorough disinfection

return to her practice. Septicæmia proper is what used to be known as puerperal fever, and is usually fatal; death sometimes takes place before the end of the third day, and generally within a week. The earlier the onset, the more alarming the prognosis. It is caused by the entrance of virulent microbes into the blood current through an open wound (either the placental site or abrasions of the birth canal).

The onset will probably occur about the second or third day after labour, although it has been known to do so within twenty-four hours.

**Symptoms.**—The symptoms will be a rigor, rise of temperature ( $103^{\circ}$  to  $105^{\circ}$  F.), quickened pulse and respirations, cessation of lochia, a dry brown tongue and bad headache. Severe cases may show also a greatly distended abdomen, sickness, and diarrhœa, a very marked weakness of pulse, and delirium. A sudden fall of temperature is an indication of great danger.

**Treatment.**—The midwife must, of course, ascertain and faithfully carry out the wishes of a doctor in every particular, keeping careful hourly notes on the progress of the case. As however, in the country she may only be able to secure one medical visit daily, and as the patient's condition will vary from moment to moment, she must be resourceful and deal with the symptoms as they arise, remembering that her efforts must be directed towards helping the patient to throw the poison out of the system, and by plenty of fluid nourishment to reinforce her allies, the white blood corpuscles.

**Diet.**—The feeding of the sick woman will require anxious consideration. It is imperative that the vital forces should be sustained, and yet equally important that vomiting should not be provoked. Concentrated essences, such as Valentine's Meat Juice and Panopepton are valuable if the doctor allows them, and so is the strongest home-made beef-tea, but if diarrhœa is a symptom the beef-tea will have to be discontinued. Milk is a stand-by, if it can be digested; this is easier after it has been peptonised, and Benger's Food is very useful if the pre-digestive process has been satisfactorily carried out, the starch in it preventing excessive wasting.

In very severe cases half an ounce of albumen water is sometimes the only thing that can be retained, and it may have to be given a teaspoonful at a time. Ice should always be procured, if possible, and everything taken should be either ice-cold or stinging hot. Jelly possesses little, if any, nutritive value.

**Nutrient enemata.**—If vomiting follows the administration of food, nutrient enemata must be resorted to. White of egg and water, and peptonised meat juices with water may be given in this way, accompanied by half an ounce of brandy.

Four ounces is as much as a patient who is very ill will retain comfortably, although saline injections are so quickly absorbed that ten ounces may be given. A pad of wool should be placed below to show how much, if any, is returned, and the patient must be adjured to remain quietly in the position in which the enema was given—*i.e.*, on her back for an hour afterwards. Both nutrient and saline injections should always be given with tube and funnel.

A midwife with a patient suffering from septicæmia will find her hands fully occupied. The sick woman must be kept scrupulously clean everywhere, but never fatigued by too long a washing; bed-sores must be guarded against, and the doctor's orders obeyed with regard to the use of aperients or enemata (the bowels to be well opened daily). She must never be disturbed in her sleep except to take nourishment, which, if properly administered, will not really rouse her. She may require the catheter, and the doctor may order vaginal douches and fomentations if there is much abdominal pain.

Saline injections *per rectum* are an invaluable item of modern treatment, and will come into the nurse's province. The doctor may administer antitoxin several times, and everything must be scrupulously prepared according to his directions. A great rise of temperature must be met by tepid sponging; a sudden fall guarded against by hot bottles and stimulation. The mouth and teeth must be attended to with cleansing lotions, the latter rubbed gently with a piece of lint covering a little stick. A penny gum-brush is excellent for the purpose.

The window must always be open, and the room cool. The midwife should sweep and dust it herself daily, and scald all utensils, both for feeding and other use. The furniture should be as simple and scanty as possible, and all rugs and carpets removed.

The chief points to be noticed are: Temperature, pulse, and respiration; pain (anywhere); redness, swelling, or tenderness anywhere (possible indications of the formation of pus); colour and nature of urine, with the quantity, and how passed; number and nature of actions; character of lochia; condition of breasts; tympanites (distended abdomen); nature of vomiting (coffee-grounds appearance a very alarming

symptom, indicating peritonitis) ; expression of face ; position of greatest ease ; exact quantities of food taken, and of sleep ; rigors—temperature during and after ; inflamed veins of legs.

Nothing will so help a doctor in his treatment of a case as an exact and intelligent record of the foregoing particulars.

### III. PYÆMIA

This variety of sepsis is occasioned by the entry of pus containing microbes into the system. It is mainly distinguished from other forms by the formation of numerous abscesses, each one being heralded by a rigor, when the temperature may reach  $105^{\circ}$  or more, followed by a profuse perspiration. Such abscesses are liable to occur in almost every part of the body, but principally the knee, elbow, and shoulder joints, breasts, lungs, liver, and kidneys. They usually begin to form from the sixth to the tenth day, and are marked not only by the multiplicity but by the rapidity of their formation. Death may take place about the tenth or twelfth day, although some women linger on for six or seven weeks, and some recover.

There is no strict line of demarcation between these various forms of puerperal sepsis, and they may all be accompanied by inflammation in different parts of the body. Such are *metritis*, or inflammation of the muscular tissue of the uterus ; *endometritis*, inflammation of the mucous lining of the uterus ; *peritonitis*, inflammation of the peritoneum ; *ovaritis*, inflammation of the ovaries ; *pelvic cellulitis*, inflammation of the cellular tissue found in various parts of the abdomen ; *phlebitis*, inflammation of a vein (probably in the leg).

**Peritonitis.**—Of these, peritonitis is perhaps the most to be dreaded. It may occur at first in a localised spot, but is apt to spread rapidly to the whole of the peritoneum, when it is called general peritonitis. The patient will be in very acute pain, and lie on her back with the knees drawn up in order to relieve the abdominal muscles ; the whole abdomen will be acutely tender, the features pinched, and the expression anxious. It seems impossible that this condition should be mistaken for after-pains, but as it is on record that this has happened it is well to give a warning.

**Treatment.**—The nurse must ascertain very exactly the wishes of the doctor, and on no account give either aperient or enema without his



orders. The diet will consist of some fluid, possibly whey, peptonised milk, albumen water, or raw meat juice, and must be given in the smallest possible quantities—never more than an ounce at a time. As long as the peritonitis lasts, it is not possible to feed a patient up. A bolster must be kept under the knees, secured by a draw sheet under the mattress, and the bed-clothes must be kept off the abdomen by means of a wooden or wire cradle or some home-made contrivance. Ropes fastened from the bed-head to something on the same level at the foot of the bed will be a help until something better can be arranged. The temperature in this illness may not rise above  $99.6^{\circ}$  F. or  $99.8^{\circ}$  F., although the patient may be in great danger; the pulse will be thin and wiry.

**Pelvic cellulitis.**—In pelvic cellulitis, unlike peritonitis, the patient is often extremely comfortable, and assures her friends that nothing is the matter. Douches, if ordered, should be hot, not less than  $115^{\circ}$  F., as they help to allay the inflammation. The patient must be kept quite flat and perfectly quiet, in spite of not feeling ill, and should be given a liberal diet if there is no tendency to sickness. Two quarts of milk, plain, and made into farinaceous foods, beef-tea, beaten-up eggs, and raw meat juice and cream may be followed before long by fish, boiled eggs, and raw meat balls, careful watch being kept to see if the stronger diet produces any evil results. Good nursing and feeding will often permit the cellulitis to subside without further trouble. A neglected case usually goes on to form abscesses, and may fall into a thoroughly pyæmic condition. A symptom to be watched for is the persistent flexing of one or other leg.

Pelvic cellulitis is frequently not diagnosed as long as the patient remains in bed, from the midwife's carelessness in recording her symptoms. As she feels fairly comfortable and does not know that her temperature is raised, she is allowed to get up and walk about at the ordinary time, thus setting up more severe mischief. Such is usually the explanation of the large number of cases in which one is told that the woman "caught cold after she got up." An unvarying temperature of  $102^{\circ}$  F. for a fortnight or more is very characteristic of this illness.

**Phlebitis.**—Patients who have been troubled with bad varicose veins during pregnancy often find them tender and painful during the puerperium. When, however, the pain is accompanied by redness and rise of temperature the phlebitis is usually considered to be of septic origin. There is frequently a thrombus or blood clot in the vein, which can be



felt like a round, hard body. This may become detached, when it is called an embolus or travelling clot, which may be carried to the lungs, and cause death by pulmonary embolism. The vein must, therefore, have only the most delicate handling, and on no account be rubbed. The leg should be placed on a pillow. It must be impressed on the patient that, however well she feels and otherwise is, if she gets up and walks about before this little blood clot has become absorbed, it may cost her her life.

#### IV. PHLEGMASIA ALBA DOLENS (WHITE LEG)

This sequela of labour does not usually occur until the second or third week, and is caused not only by the clotting of blood in the vein, but also by the blocking of the lymphatics and by inflammation of the surrounding tissues, so that the whole leg is swollen, hard, and brawny:

**Symptoms.**—The symptoms are great pain and swelling of the limb, with a rise of temperature, and often a rigor. A hard vein may be felt standing out like a cord, but it should not be handled. In a typical case the leg may look white from blockage of the lymphatics, so that it resembles a bladder of lard.

The disorder may resolve itself in one of four ways : 1. If the patient rests for at least six weeks, the clot usually becomes absorbed, and the proper circulation is restored. 2. The clot may completely fill the vessel, and permanent blocking occur, in which case the swelling and lameness may last some months, during which time the patient must remain in bed. 3. If antiseptics is not observed, suppuration may occur. 4. If exertion is permitted, pulmonary embolism may ensue.

**Treatment.**—As soon as the affection is diagnosed, the doctor must be summoned, the leg swathed in cotton-wool, raised 15 inches from the bed on pillows, and protected by a cradle. Perfect rest must be maintained until the swelling has disappeared and the doctor has given permission for gentle movement. Even then the limb will for months be liable to swell. After the pain and swelling have subsided, a bandage should be worn.

#### DISINFECTION

In any case where the midwife has been called on to nurse a thoroughly septic patient, she must herself superintend the subsequent disinfection of the room and appliances, and must satisfy herself that the measures taken are adequate. The room should have every cranny pasted up,

and be well formalined or sulphured. The vapour will act best if the surfaces to which it is exposed are first thoroughly damped. The walls should be then whitewashed or papered, the old paper being removed. Everything used by the patient should be in the room during the sulphuring, except the mattress and mackintosh, which in a case of real septicæmia should be unhesitatingly burnt. The blankets should be soaked in a strong disinfectant (a certain amount of injury to the fabric is inevitable), and then washed ; everything made of cotton, glass, or china must be boiled for an hour, indiarubber for a shorter period. All wood and iron well scrubbed and carbolised, and exposed to air and sunlight.

With regard to herself and her appliances, the midwife will probably receive notice from the local supervising authority as to how many days she is to take for disinfection. During that period she should, on the first day, take a bath with lysol or carbolic, wash her hair with the same preparation, change all her clothes, and scrub her hands and arms for ten minutes by the clock (afterwards burning the nail-brush), soaking them subsequently for five minutes in perchloride of mercury 1 in 1,000.

The bath, scrubbing and soaking must be repeated daily ; the hand disinfection twice a day ; and the midwife must be out in the fresh air as much as possible.

On the last day of the disinfection period, the midwife must again bathe, wash her hair with lysol, change all her clothes for the second time, and perform her daily scrubbing and soaking. She must never again wear any garment or use any appliance which has been in requisition at this case while attending on another maternity patient, unless it has been boiled for an hour.

## CHAPTER XLV

### PROLONGED LABOUR: UTERINE INERTIA—SLOW DILATATION— CONTRACTED PELVIS

Uterine Inertia: Primary Uterine Inertia and its Treatment—Secondary Uterine Inertia and its Treatment—Tonic Contraction. Slow Dilatation: Circumstances in which it occurs—Premature Delivery—Premature Rupture of the Membranes—Treatment of Rigid Os. Contracted Pelvis: Diagnosis—Flat Pelvis, Rickety Pelvis—Small Round Pelvis and Funnel-shaped Pelvis—Labour obstructed by Abnormal Fœtus—Dangers of Contracted Pelvis—Treatment—Posturing the Patient—Walcher's Position—Preparation for the Doctor—The Pulley.

It has been well said that there are three factors to be considered in every delivery: the passenger or child, the passage down which it must travel—the birth canal; and the powers or force which will effect the delivery if it is to be a natural one.

#### I.—UTERINE INERTIA

The driving force by which delivery is effected is lodged mainly in the uterus (it is aided in the second stage by the abdominal muscles), and is the result of successive contractions of the strong uterine muscle. Beginning feebly, and at intervals of perhaps an hour's duration, they follow each other in a normal labour with increasing rapidity, pressing the bag of waters down into the os; the more they bulge through the opening, the stronger the reflex action they excite, and the more regular and effective the contractions become, so that a labour which began slowly may have an almost unexpectedly rapid termination. It is customary to give these uterine contractions the name of "pains," and for the sake of convenience we shall continue to do so, but as a matter of fact the terms are not really synonymous. The contractions are usually accompanied by pain, but that they are not so invariably is proved by the fact that children are occasionally born after one or two pains or even none at all; yet it is obvious that they have not been born without contractions taking place.

**Primary uterine inertia.**—Occasionally the contractions, instead of

growing stronger as labour advances, continue weak and ineffectual, and it is apparent that delivery will be greatly delayed unless some improvement takes place. This condition, when the pains have been weak from the first, is known as primary uterine inertia. It is not in itself dangerous, but it is excessively wearisome to the patient, and the midwife's ingenuity will be taxed to the utmost to keep her cheerful. The fact that she is in no danger will be proved by her general condition. The pulse will be normal, neither quicker nor slower than usual, the face will not be flushed, and physical distress will be markedly absent. During a pain the uterus will be felt contracting under the hand, but in a few seconds it will completely relax, so that the outline of the child can be distinctly felt. The condition of primary uterine inertia is frequently found in women who have borne many children, and is favoured by fatigue and debility, a full bladder or rectum, over-distension of the uterus as in twins or hydramnios, adhesion of membranes round the internal os, so that no bulging bag is formed, intoxication, and agitation at the arrival of the midwife or doctor, especially if they are strangers to the patient.

**Treatment of primary inertia.**—In some of these cases, the cause may be promptly removed. To give an enema, pass a catheter, or provide hot milk or tea, will often have the desired effect. If the patient has been overtiring herself under the impression that the only way to revive the pains is to walk briskly up and down the room for hours, she must be encouraged to take rest and be reassured as to her safety during this period of inertia. It is very advisable to note in what positions the pains are best, as women vary greatly in this respect. Lying on the back or side, standing, walking, sitting, kneeling, have each proved effectual at times when the other positions have failed. With some patients, again, a considerable amount of heat from a fire or hot bottle has appeared to be a necessary condition.

If the uterus is over-distended with liquor amnii, it will probably be sufficient to rupture the membranes, but this may only be done when the second stage is virtually reached, and with the vertex presenting. The attendant may find otherwise that she has cured one trouble by creating another. Another treatment that may be tried during the second stage of labour in primary inertia is the administration of sulphate of quinine, a dose of 5 grains to be repeated in half an hour. This often has a most beneficial result in increasing the pains. Ergot must *not* be given.



**Secondary uterine inertia.**—The midwife must distinguish between primary uterine inertia, when the pains have never been strong, and secondary inertia, when, having started briskly, they have passed away without effecting their object. In the former case the uterus is merely lazy, and if it can be stimulated to do its work, and get it over, so much the better. It has a reserve of energy which will be called into action by the emptying of the uterus, and the third stage of labour will pass off happily, good contraction and retraction being present. It is quite otherwise with secondary inertia. Here the uterus is exhausted, it has used up its supply of force, and has nothing to draw upon until it has had time to accumulate more. If it can be spurred on by artificial means to expel the child, or if the child is forcibly extracted, the uterus has no power left in it to contract, and remains large, soft and flabby, while blood pours from the gaping mouths of the blood vessels.

**Treatment of secondary inertia.**—In all cases of secondary uterine inertia, it is needful therefore that the patient should rest, and if possible, sleep, until the return of strong pains announces that a further supply of energy is available. As a midwife may not use forceps, the question whether that measure is necessary may appear to be entirely one for the doctor, and not to come into her province; but this is not so. If a doctor finds the patient suffering from weak, ineffectual pains, he must depend entirely on the midwife's history of the case for guidance as to his future action. In many cases, too, his time would be spared if the midwife in her note told him not only that the second stage had already lasted for so long, but that secondary inertia had set in, and that the condition of the mother and fœtus appeared otherwise to be satisfactory. He would probably recommend in such a case that the patient should sleep, or that 20 grains of hydrate of chloral should be given, and that he should be summoned on the return of the pains.

It should be noted that the terms primary and secondary uterine inertia have nothing whatever to do with the first and second stage of labour, but refer entirely to the question whether the pains have been weak throughout, or whether they began strongly and afterwards nearly ceased.

Occasionally there is confusion also between secondary inertia and tonic contraction of the uterus, a very dangerous condition which is described below, and will be further dealt with in the chapter on ruptured uterus (Chap. LII.). The resemblance between the two conditions is so



superficial that it is almost incredible that the difficulty should arise. In both cases regular pains have nearly or entirely ceased, but with inertia the patient is calm and placid, her pulse and temperature are normal, the abdomen is soft and not tender, and the vagina cool.

**Tonic contraction.**—When, in consequence of obstructed labour, tonic contraction has set in, the uterus instead of being permanently relaxed is permanently contracted, the abdomen is hard and very tender, the vagina hot, with throbbing arteries, and the patient's whole condition altered for the worse. The temperature will probably be raised, pulse small and quick, respirations hurried, lips dry and brown, tongue coated, expression one of great distress. The midwife's duty is, of course, to summon the doctor with all speed, and to prepare for operation, since immediate delivery is indicated. She must also keep the patient in the position in which she finds most ease, and in which the pains were least frequent before they merged into one continuous pain.

## II.—SLOW DILATATION

**Slow dilatation of the os.**—A prolonged labour will not infrequently occur when to the inexperienced attendant there appears to be no reason for delay except the natural perversity of the os. In all such cases it is well to trace back the obstacle to its right cause. Dilatation is slow in cases of premature delivery, premature rupture of the membranes, malpresentation, contracted pelvis, and in placenta prævia, where the placenta is attached to the lower uterine segment. Also—and here it is fair to lay the blame upon the os itself—with elderly primiparæ, in cases of cancer, or where the patches of scar tissue (always an inelastic material) testify to the occurrence of lacerations in past labours. It is slow occasionally, too, from neurosis, from excessive rapidity and acuteness of the pains, and when the patient has been permitted to use the pulley during the first stage.

**Premature delivery.**—In the last few days before labour, the circular fibres round the internal os (or upper end of the cervix) lose their contractile power and the internal os begins to dilate, making the cavity of the cervix or neck of the pear one with the cavity of the uterus or body of the pear. If labour comes on before its time, this preliminary process has not taken place, and the dilatation of the external os must wait until the resistance of the internal orifice has given way.

**Premature rupture of the membranes.**—This is the most frequent

cause of slow dilatation, and is usually occasioned by anteversion of the uterus in a multipara or by a contracted pelvis, malpresentation or some other form of obstructed labour. The best dilating agent is the small round bag in front of the child's head, cut off from the main supply of liquor amnii by the accuracy with which the vertex fills the pelvis, pressing evenly at every point, fitting down into even a small os in a way which the hard round head cannot imitate. In cases of obstructed labour, where the presenting part does not fit the pelvis, nor cut off the rest of the liquor amnii, the bag becomes lengthened by its increased contents, and ruptures early; the os must then be dilated by the presenting part itself, which, not being perfectly round, will press harder at one point than at another, causing spasmodic contractions instead of filling out and distending the entire circle.

**Treatment of rigid os.**—In cases where the membranes have not ruptured early, in spite of the existence of a malpresentation, there is still great delay, as the long, hanging pouch of membrane does not fulfil the normal conditions. The treatment indicated for a rigid os is, as a rule, a prolonged hot bath, and 15 to 20 grains of chloral hydrate; both may be repeated in four hours' time if the pulse keeps good. Chloral hydrate not only soothes the patient's mind, and disposes her to sleep, but it also has a specific action upon the os, and renders it more dilatable. If the pains at the beginning of the first stage are unduly rapid and severe the position which provokes them least should be adopted, and occasionally a hot-water bottle helps to allay them. Spasmodic irregular rapid pains are not so efficacious at this stage as those at longer intervals, as they keep the os in a state of nervous contraction. The midwife will be wise to consult a doctor if the first stage is prolonged over twenty-four hours, even though there is probably no immediate danger. She will not be in a position to diagnose a diseased cervix, and it will greatly reassure the patient to find that the midwife is not determined to keep the case in her own hands at all hazards, but prefers to obtain the doctor's advice on the least deviation from the normal.

### III.—CONTRACTED PELVIS

**Diagnosis.**—There are many forms and degrees of contracted pelvis (Plate LXVI.), and as the condition forms one of the most serious complications of labour it is very vital that a midwife should be able to diagnose it.

**Flat pelvis, rickety pelvis.**—The most ordinary forms are those of flat pelvis and rickety pelvis, the latter being generally contracted as well as flat. In these the promontory of the sacrum has fallen forward so that the true conjugate may measure  $3\frac{1}{2}$  inches or 3 inches, or even less, and the posterior ends of the iliac bones are pulled in towards each other, so that the intercrystal diameter is no longer 1 inch larger than the interspinous, but may be the same size. This form usually occurs in consequence of early malnutrition and a rickety childhood. A history of bottle feeding, together with late teething and late walking, will often lead to a suspicion of the existence of a rickety pelvis, especially if there are present the characteristic signs of shortness of stature, knock-knee, beaded ribs, enlarged joints, etc. Measurements will reveal a small conjugate, and there will probably not be the normal difference (1 inch) between the intercrystal and interspinous diameters. If the pelvic inlet is too small for the head to enter, there will probably be a pendulous abdomen. This is a serious sign of contraction in a primipara; in a multipara it *may* occur merely from the excessive laxity of the abdominal walls, in which case the head can easily be made to enter the pelvis, if the patient is laid on her back. Another indication of contraction will be a history of progressively difficult labours. The first child is apt to be smaller than the succeeding ones, and may therefore be able to pass fairly easily where the second one cannot.

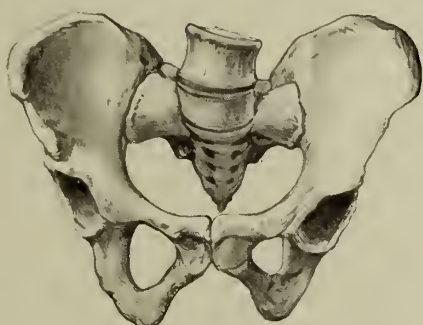
As has already been said, the midwife should discover the condition when the patient first comes to book, and having discovered it, she should insist on her being examined by a doctor. If it has not been noticed until labour has begun, further indications will be detected on abdominal and vaginal examination. Malpresentations and occipito-posterior positions are common with contracted pelvis, and if the vertex does present, it will probably be found not to have engaged in the brim, but to be freely movable abdominally, and to recede before the examining finger. The membranes will be pouched, owing to the fact that the presenting part is not filling the brim, and that more liquor than usual has escaped in front of it; to the same cause is due the early rupture of the membranes, a very frequent occurrence in contracted pelvis. In cases where the membranes have been strong enough to resist this increased pressure, and have fulfilled their duty in dilating the os while the head was still above the brim, the lips of the os will not remain apart owing to the absence of pressure from the head, but will



FLAT PELVIS



RIKETY PELVIS.



SMALL ROUND RICKETY PELVIS.



FUNNEL-SHAPED PELVIS.





fall together again, hanging down like a thick soft curtain into the vagina. The midwife who has not diagnosed a contracted pelvis, and has therefore failed to attribute to this state of things its true significance, will probably not consider that a doctor is needed, the os being still of the half-crown type, until the patient's death from ruptured uterus will rudely awaken her from her false security.

If the head has engaged in the brim, the sagittal suture will often be found in the transverse diameter of the pelvis, and usually nearer the sacrum than the pubes, the head having adapted itself to the contraction, and engaged in a tilted position, a parietal bone being the presenting part. Occasionally the sagittal suture will be found nearer the front than the back; this is a less favourable condition than the preceding, as the parietal eminence is very apt to become fixed over the pubic bone. Other indications of the contraction are the over-riding of the scalp-bones at the sutures, and the detection of both fontanelles in the first and second positions of the vertex, showing an absence of flexion. The anterior fontanelle only will probably be felt in the third and fourth positions, owing to the same cause. Labour will, of course, be slow, but if the head can once pass through the brim in a flat pelvis, it will very possibly right itself and be born naturally.

**Small round pelvis, funnel-shaped pelvis.**—There are two other fairly common forms of contracted pelvis, the generally contracted or small round pelvis, in which every diameter is diminished and labour will be slow throughout, and the male or funnel-shaped pelvis, where the difficulty will be greatest at the outlet. The head will probably engage in the pelvis and labour will proceed happily up to a certain point; the midwife will then gradually become conscious that no progress is being made, and that the head, having descended to perhaps half an inch from the perineum, is now perfectly stationary. Progress may be simulated by the gradual increase of the caput succedaneum, which may come to rest upon the perineum, and cause pressure upon the internal surface of the anus. This is a frequent cause of error in careless or inexperienced midwives; they feel confident that good progress is being made, and that the help of a doctor is not needed, and in consequence omit to summon him until the patient is thoroughly exhausted, and either secondary inertia or tonic contraction has set in.

The rarer forms of pelvic deformity may be studied in any of the good medical books now in circulation, but it is not necessary that a midwife

should be able to distinguish them from each other, so long as she can clearly apprehend the existence of some deformity. It should be noted that any circumstance which causes one-sidedness in a patient, with or without a limp in her walk, will probably also cause some degree of pelvic contortion, and consequently some difficulty in labour. In a case known to me (A. G.) a foot had been amputated in childhood from accident, not disease, and a cork foot substituted. There was therefore at first sight no cause for alarm ; but further inquiry revealed the fact that the cork foot had not been worn regularly, and that one side of the pelvis was at least two inches higher than the other.

**Labour obstructed by abnormal fœtus.**—It must be remembered that labour may be obstructed as easily by an abnormal fœtus as by deformity on the part of the mother. It may be of a size totally incompatible with the birth canal, weighing perhaps 12 lb. or 13 lb., the mother being of average dimensions. It may itself be of normal size, but with an abnormally large head, such as is found in a hydrocephalic infant. In such a case the doctor will probably have to perforate the head before he can deliver, and it will save his time, and also unnecessary suffering to the patient, if the midwife has made a correct diagnosis before sending, and has given him some indication of the nature of the delay. The child may also be suffering from morbid enlargement of some portion of its body, or it may be a double monster, of which there are several varieties.

**Dangers of contracted pelvis.**—A patient whose pelvis is contracted not only suffers more pain, but is liable to greater danger during her labour than is one with normal dimensions. In the first place, she will become exhausted, and her vital forces being low, they will offer less resistance to their enemies. She will run greater risk of *sepsis*, both from the probable repetition of vaginal examinations, and also from the bruising and sloughing of the maternal soft parts, due to compression between the child's head and the pelvic bones. The os may be nipped, and so become œdematous and bruised, or else torn. The premature escape of the liquor amnii leads to constant pressure on isolated points of the birth canal, first bruising and tearing, and subsequently leading to *sloughing*, or death of the tissues from the cutting off of the blood supply. All dead tissues mean decomposition ; they usually separate from the living tissue by a process which involves septic discharge, and the decomposing matter and the discharges laden with bacteria

are a very fruitful source of danger to a lying-in woman. Occasionally one of the sloughs is formed of the entire thickness of wall between the vagina and bladder. When it separates, which it probably will not do until the second week of the puerperium, a passage or fistula (*vesico-vaginal fistula*) will be found to exist, causing incontinence of urine, and requiring operation.

**Post-partum hæmorrhage.**—Another danger is that the uterus will become exhausted in its ineffectual attempts to empty itself, and may be so worn out in the first and second stages of labour that it entirely fails to contract and retract in the third stage, alarming hæmorrhage setting in in consequence.

**Rupture of uterus.**—Again, the patient may not live to see the third stage of labour, as in one of its powerful attempts to expel the foetus the uterus may rupture, in which case the woman will probably die of collapse.

**Dangers to the foetus.**—The effects of contracted pelvis upon the child may also be of the most serious description. In consequence of the moulding of the head—a very marked over-riding of the sutures—there may be *rupture* of the very delicate *blood vessels inside the head*, causing fatal hæmorrhage. There may also be *sloughing of the face or scalp* from long pressure, a serious condition in an infant, and one requiring careful aseptic treatment.

**Dints.**—The bones of the head may also be dinted, and such marks are useful to confirm a diagnosis as to position, and to show where the pressure is chiefly felt; they are not prejudicial to the child's health, and will pass away.

**Cephalhæmatoma.**—There are two varieties of soft swellings which appear on the infant's head as a result of pressure during labour. The first is the caput succedaneum, which we have already described; the second is the cephalhæmatoma, a blood tumour formed between any one bone and its covering of periosteum. It may be easily distinguished from the caput by the fact that it never occurs over a suture, but belongs exclusively to one bone. Though it is often single, there may be two, three, or even four separate cephalhæmatomata at a time. The tumour is not usually noticed until a day or two after labour, and has a definite period of growth before subsiding, whereas the caput succedaneum becomes hourly less. The mother may in both cases be reassured as to the ultimate disappearance of the swelling.

Other dangers to the child arising from contracted pelvis are those caused by *malpresentation*, for the prognosis is never so favourable as when the vertex presents. There may also be a *prolapse of the funis*, when pressure will tend to stop the circulation, and cause death from want of oxygen (asphyxia); and there may be general pressure on the fœtus from the uterine walls, after the membranes have ruptured and the liquor has drained away. In such a case the fœtal heart sounds will at first become tumultuous and difficult to count, and afterwards increasingly slow and weak, until they stop altogether. It is therefore very necessary to keep them under observation during a long labour, and immediately to acquaint the doctor when the tumultuous stage is reached. In cases of marked contracted pelvis it is not infrequently found necessary to destroy the child before it can be delivered.

**Treatment of contracted pelvis.**—When a midwife becomes aware that she has to deal with a contracted pelvis, whether before or during labour, her duty is at once to acquaint the patient's doctor with the fact. But however determined she may be to fulfil her duty in this respect she may still find herself in sole charge of the patient for a considerable number of hours, for the doctor may either be out on his rounds or, having paid one visit, he may promise to return at the beginning of the second stage. It is therefore most important that she should have a clear idea how to conduct the case until his return.

**Care of the patient.**—The usual rule will hold good with regard to keeping up the patient's strength by means of light, nourishing food, but the nourishment must be of a particularly digestible nature, with a view to the anæsthetic which may be required later. The enema must on no account be omitted, and it is well during a protracted labour to follow it with a second after a few hours.

The first stage of labour must be curtailed as much as possible in order to save the patient's strength. To sit in a hot bath in front of the fire for half an hour with a blanket pinned round her neck has often a very good effect upon an undilating os, and a soothing one upon the patient herself, especially when it is followed—as some doctors allow, if the pulse is good—with 15 to 20 grains of chloral hydrate. After this the patient should be made to lie down for an hour, and encouraged to sleep if the pains permit. In these cases the membranes usually rupture early, and special care should be taken to prevent this, if possible. Change of position is good, but if the membranes are rup-



tured the patient must not be allowed to walk about, as the liquor will probably pour away far more than is the case when a normal vertex blocks a normal pelvis.

**Posturing the patient.**—If the uterus is anteverted and the fundus tips forward a binder should be applied, and the patient encouraged to lie on her back. If the contraction has caused the head to slip sideways instead of engaging in the brim, and the child threatens to assume a transverse position, she should be made to lie on the opposite side to the fundus, which will naturally sink downwards, and so push the head more into the middle line. If the child is lying in an occipito-posterior position, labour will be slower and more difficult than when its back lies to the mother's front. The midwife may therefore be able to convert a serious case into a simple one, if she can cause the child to make the long rotation. One means of doing so is thoroughly to flex the head by vaginal manipulation, but this cannot be recommended. In the first place, a finger in the vagina always constitutes a danger to the patient, and in the second it is not sufficient to push the forehead up unless the occiput is at the same time brought down, and this in most cases is impossible.

**Walcher's position.**—At the beginning of the second stage, if the head is not completely through the brim, Walcher's position should be adopted. In this the patient lies on her back on a rather high bed or table with her buttocks at the edge, and her legs hanging straight down, not resting on anything. It is an uncomfortable attitude, especially to one who is already in great pain, but it increases the true conjugate by half an inch, and will often make it possible for the head to pass, when otherwise instrumental aid would have been required. This attitude, however, will not help when the pelvis is funnel-shaped and the difficulty is entirely at the outlet.

**Preparation for the doctor.**—While waiting for the doctor the midwife must be preparing the things he will need. Besides arranging for a sufficiency of hot and cold water, she should put on to boil a clean fish-kettle or saucepan of water, in which he may sterilise his instruments, and wash out a bedroom jug or basin to be used as an instrument tray, which she must also thoroughly rinse with a strong disinfectant. It should then be filled with a solution of lysol or carbolic, and covered over with a clean towel. A second jug should be similarly prepared for a douche, in case one should be ordered, and everything put out for the



baby, sterilised thread and scissors, eye swabs, mouth rag, and flannel receiver.

The mattress will often be almost impossibly low for operating, but a couple of bolsters placed beneath it from head to foot will greatly help matters. There must be nothing slippery on the floor, all mats etc., should be removed, and if any water has been spilt it must be thoroughly wiped up.

A good light must be thought out and arranged beforehand. It will be very annoying if the doctor has to wait in the middle of his task while a lamp is cleaned and lighted, and in places where there is no gas it is well to light a lamp before he comes, and have it in readiness in some other room.

**The pulley.**—The patient should in no circumstances be given the pulley until the second stage is reached. After the os is fully dilated, it is well to let her bear down, even when the use of forceps is anticipated, as her own efforts will help to mould the head, and so facilitate the doctor's task. If, however, she has been pulling hard for some time, it is better to encourage her to rest until his arrival, rather than to incite her to fresh efforts. The bladder should be again emptied, and if necessary the catheter passed. The midwife should desire the friends to have in the house fresh milk and a couple of eggs, to put a second nightdress, sheets, and blanket to warm at the fire, and to provide something that can be used as hot-water bottles. Old beer bottles filled with hot, not boiling water, and slipped inside the legs of stockings, are very valuable for this purpose.

## CHAPTER XLVI

### ABNORMAL PRESENTATIONS

Pelvic Presentations: Simple Breech—Breech with Extended Legs—Footling—Causation and Mechanism of Breech Presentations—Dangers to the Child and to the Mother—Diagnosis—Treatment. Face Presentations: Causation—Positions—Mechanism—Prognosis—Diagnosis—Treatment—Brow Presentations. Transverse Presentations: Causation—Mechanism—Diagnosis—Treatment—Anæsthesia. Funis Presentations: Causation—Treatment.

#### I.—PELVIC PRESENTATIONS (PLATE LXVII.)

THERE are three varieties of pelvic presentations:—

1. **Breech presentation.**—The seat presents, the thighs are bent up close to the abdomen, and the knees are so flexed that the heels are close to the buttocks. This is the natural attitude, the child's muscles being in a condition of flexion, and it is also the most favourable, because there is a thicker wedge to dilate the passage before the head, always the greatest difficulty, enters it.

2. **Breech with extended legs.**—The breech still presents, but the legs are straight, one foot over each shoulder. When they are really fixed there is one of the most difficult of the pelvic presentations, since the legs form a rigid splint to the body and prevent it from following the curves of the pelvic canal. It will probably require medical aid.

3. **Footling.**—One or both legs may be extended down away from the body, as though the child were standing or kneeling. In this case one or both feet or knees present and dilatation is very slow from the small size of the dilating wedge.

**Causation of pelvic presentation.**—The principal causes of pelvic presentations may be summed up in the formula: Anything that prevents the head from engaging in the brim. The faulty shape of the mother's pelvis will often be to blame. Three per cent. of pelvic presentations occur with normal pelvis, and 6 per cent. with contracted. Other conditions which favour their production are: Excess of liquor amnii, when the child will have exaggerated freedom of movement. Prematurity

and still-birth, when the altered specific gravity will affect the causes which usually determine the presentation of the vertex. Twins, when the two children accommodate themselves better if the large end of one fits into the small end of the other.

**Breech presentation positions.**—There are four positions of the sacrum: (1) The left sacro-anterior, when the sacrum is directed to the mother's left foramen ovale, and the long diameter of the hips (bis-iliac) lies in the left oblique diameter of the pelvis. (2) The right sacro-anterior. (3) The right sacro-posterior. (4) The left sacro-posterior. Of these the first is the most common, as it is when the vertex presents and for the same reasons. The sacro-anterior positions are more favourable to an easy delivery than are the sacro-posterior.

**Mechanism of breech presentations.**—The movements are five in number: descent, internal rotation, lateral flexion of the body, external rotation, and flexion of the head. (Plate LXVIII.)

*Internal rotation.*—Our old rule continues to hold good. The presenting part, one or other buttock according to the position, first meets the resistance of the pelvic floor, and is swept by it to the place where there is most room and least resistance—*i.e.*, under the pubic arch. The long diameter of the hips thus adapts itself to the long diameter of the outlet, and lies in the antero-posterior gutter.

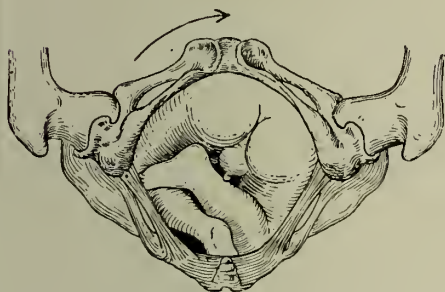
*Lateral flexion.*—The pelvic canal being much curved, it is obvious that a long body cannot travel down it unless it adapts itself to the curve. This in normal pelvic presentations is what occurs, the anterior buttock hitching under the pubic arch while the posterior buttock is born first over the perineum.

*External rotation.*—The long diameter of the shoulders enters the pelvis in the long diameter of the inlet, *i.e.*, the oblique. The thighs are thereby rotated into that oblique position which they at first occupied, and further rotation takes place until the long diameter of the head has accommodated itself in the long or antero-posterior diameter of the outlet. The head is then born by flexion. With the third and fourth positions the head may be born face to pubes, or as in the vertex it may make the long rotation, and the face turn towards the sacrum. This is the more favourable course.

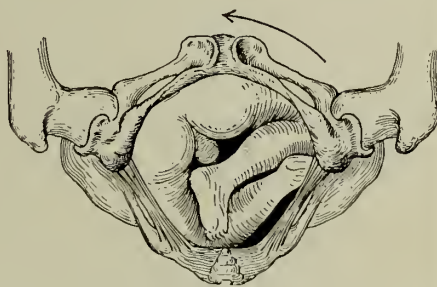
**Dangers to the child.**—This class of presentation is of peculiar interest to a midwife, because it is the only deviation from the normal vertex in which she is allowed to deliver the child herself without summoning



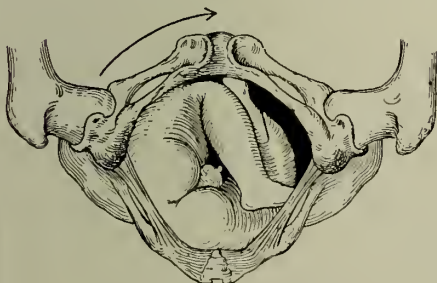
FIRST BREECH PRESENTATION AT COMMENCEMENT OF LABOUR.



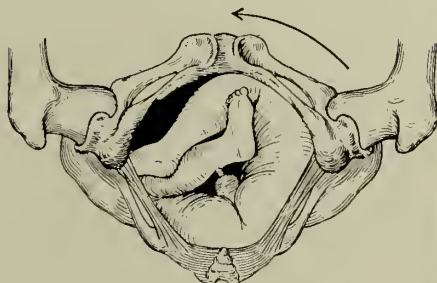
FIRST BREECH PRESENTATION.



SECOND BREECH PRESENTATION.



THIRD BREECH PRESENTATION.



FOURTH BREECH PRESENTATION





medical aid. It is a great responsibility, since the life of the child is largely dependent upon her skill, the mortality in some hands being only 1 in 10, whereas in others it amounts to 1 in 3. In any case, the prognosis for the child is worse than in vertex presentation.

*Pressure on the cord.*—The safety of the foetus is bound up with the protection of the funis from injury or pressure, since it is by that channel alone that oxygen reaches the blood of the foetus. Anything that cuts off the circulation of the umbilical blood vessels even for a few moments from its maternal source will kill the child as surely by asphyxia, or oxygen-hunger, as its mother would be killed if she were deprived of the power of breathing through her lungs. In vertex presentation the hard head is delivered without ever coming into contact with the funis, which slips through the pelvis in company with the soft body and limbs of the infant, and suffers no injury. In breech presentations, the funis being attached at one end to the advancing trunk, and at the other to the placenta, which is still high up in the uterus, it must of necessity be nipped between the head and the pelvic brim, and if the condition is maintained for more than a very few moments the death of the child is inevitable.

*Premature inspiration.*—Another danger arises from premature inspiration. The cold air striking on the trunk and limbs will provoke inspiration, and as the mouth and nose are still in the passage, mucus will be sucked in instead of air, and so clog the passages as to cause suffocation.

**Dangers to the mother.**—For the mother the prognosis is not markedly worse than in vertex presentations, but with her also there are some particular dangers to guard against. The rapid emptying of the uterus involved by the extraction of the child's head causes a tendency to *post-partum hæmorrhage*; there is some fear that the head may be pulled through an imperfectly dilated cervix, especially in a footling presentation, causing *laceration of the os*, and it is much more difficult to guard the perineum than it is with vertex cases. For this reason it is highly advisable for a midwife to summon a doctor when she first diagnoses a breech case in a primipara. The Central Midwives Board rules do not now insist upon her doing so, and if it is second stage when she arrives, there will probably not be time, but when possible it is undoubtedly the wiser course.

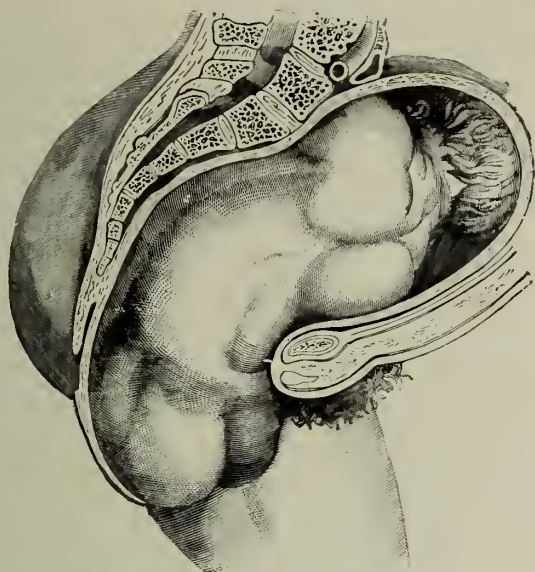
**Diagnosis of pelvic presentation.**—The diagnosis of a breech case is

not as a rule difficult. On arriving the midwife will probably find that the patient is having weak irregular pains, so that she hesitated about sending for help, especially as if a multipara she may have noticed a great difference between this and her other labours, the preliminary sinking of the uterus, with its accompanying sensation of relief, being absent. These signs are common to all malpresentations.

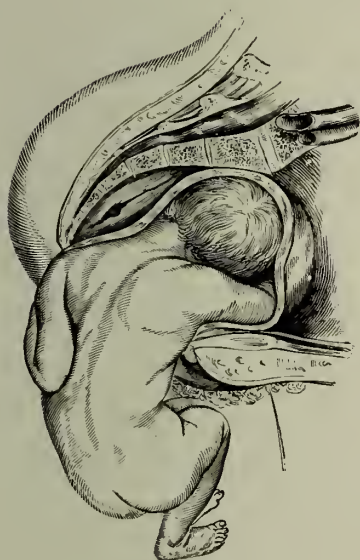
*Abdominal examination.*—Abdominally, the firm round head will be felt at the fundus, very distinctly in sacro-anterior positions, less positively in sacro-posterior; the head may be made to nod. If it is still the first stage, there will be an entire absence of any fœtal parts to be felt by the pelvic grip, and the fœtal heart sounds will be above rather than below the umbilicus.

*Vaginal examination.*—Vaginally the membranes, if not prematurely ruptured, will be felt pouched, like the finger of a glove. The next thing that will probably be noticed is that the presenting part is very high, and the inexperienced midwife will perhaps withdraw her finger and announce positively that it is out of reach. Difficulties exist to be overcome, and she will probably find by pressing rather harder than usual on the abdomen with her left hand, and turning the patient from her side to her back while the examining finger remains in the vagina, that for a moment, at any rate, the presentation is within reach. She will then become aware of the absence of that firm round head to which her finger has grown accustomed. If in spite of these manœuvres she still fails to diagnose the presentation, and if the patient's condition is perfectly good, she will do well to withdraw her finger, and busy herself in putting out the baby clothes and arranging the room. At the end of an hour, having had time to collect herself, she will examine again with two fingers instead of one, thus lengthening her reach. If she still cannot find the presenting part, and if she is not clear about the abdominal diagnosis, she had better at once call in further aid.

Probably, however, at one or other examination her fingers will have detected the breech, the distinguishing features of which are the three points of bone arranged in a triangle, and consisting of the tubera ischii and the coccyx. Behind the coccyx may be found the sacral vertebræ, a row of little promontories one above the other; in front the anus (occasionally mistaken for the mouth), and the genitals. With male children the ridges of the scrotum form a very easy guide to diagnosis. If a small part presents itself instead of the breech it is not always clear



BIRTH OF BREECH BY LATERAL FLEXION.



BIRTH OF SHOULDERS.



BIRTH OF HEAD.



whether it is a hand or a foot, an elbow or a knee. With the hand the thumb can be made to oppose the fingers in a way impossible to the big toe. One side of the foot is thicker than the other, whereas with the hand they are similar, and finally the os calcis or heel is a very distinctive bone, and resembles no part of the hand. The elbow is far more pointed than the knee.

A midwife should accustom herself to the feel of all these various points by passing her hand over them with that intention when she is giving her babies their morning bath. It can be done quite quickly and without making them either cold or uncomfortable, and if she is not familiar with the contours of all these little landmarks she will find herself hopelessly mystified when face to face with her first abnormal presentation.

**Treatment.**—The midwife must take care not to rupture the membranes, and if they are ruptured to keep the patient lying down, so that all the liquor may not drain away. In the second stage, as the breech begins to distend the perineum, the patient should be turned on her back across the bed, a foot on a chair at either side, and her buttocks at the edge. An attendant should be placed beside her with instructions to press the fundus well down as the shoulders and head are born, and also to make pressure over the pubes, so as to increase flexion.

When the trunk and legs first appear, the midwife may cover them with a warm cloth, to prevent inspiration, but on no account must she pull. If she does, the arms, which are probably flexed on the chest, will fly above the head, and greatly increase her difficulties. When the funis appears it may be gently drawn down, and placed to one side of the sacrum, to avoid being nipped by that bone. The pulsations will give a good indication as to the urgency with which extraction is to be performed.

*Delivery in simple cases.*—If the size of the limbs shows that the child is small, it will probably be sufficient for the midwife, having rotated the head, so that it lies exactly in the antero-posterior diameter and not the oblique, to support the child's body, and carry it gently forward, leaving it to nature to expel.

*Weit-Smellie method, or jaw-shoulder traction.*—If, however, the child is of large or even of average dimensions, it will be better for her to prepare to extract, after the lower angles of the scapulæ



have appeared, the arms being flexed on the chest, and so delivered easily and naturally. The midwife will cause the child's body to ride on her left forearm, one leg on either side, and hook the first and second fingers of her left hand into its mouth, one on either side. If the mouth is out of reach she must use suprapubic pressure to cause flexion, and so bring it nearer. Flexion at this point is all-important. The first and third fingers of the right hand will then make traction on the shoulders, while the second finger increases the flexion caused by the left hand by pressing on the occiput. It may be necessary to pull with some energy if it is a large head, as in order to save the child's life it must, as we have said, pass quickly through the brim of the pelvis, a process which in a vertex presentation often takes some hours, and is facilitated by moulding. If, however, the midwife does not check herself in time, she will end by pulling it through the perineum. She should stand firmly with her feet apart, the traction should be at first down, and then more gently up over the mother's abdomen.

Occasionally there is a hitch due to the arms being above the head, especially if the midwife has been so ill-advised as to pull on the trunk before the expulsion of the shoulder blades. In this case she must, while the shoulders are in the conjugate diameter of the outlet, grasp the child close to the vulva in such a way as to avoid pressure on its internal organs, and draw it down so as to get the arms well within reach, then swinging the child's body to the mother's front by the ankles, pass two fingers up over the posterior shoulder, flex the arm at the elbow, gently draw it downwards and forwards, so that it passes over the face and chest. The midwife's first and second fingers must be used, and must be placed along the child's upper arm, so as to protect the humerus like a splint, as it might otherwise be fractured in the process. Having freed one arm of the child, she must repeat the performance with the other, first rotating the body till the anterior arm lies posteriorly, and using her opposite hand.

If the trunk does not descend promptly when the second stage is reached, the midwife should send at once for the doctor. It may be too large and be arrested at the brim, or the case may be one of *impaction*, either breech with extended legs, when, as we have said, lateral flexion cannot take place until the legs are detached from the shoulders; or *dorsal displacement of arm*, when the arms and head make a solid wedge, requiring skilful treatment.

## II.—FACE PRESENTATIONS (PLATE LXIX.)

**Causation.**—The principal cause of this abnormality, which occurs about once in every 250 cases, is the occurrence of extension instead of flexion, in a case which would otherwise have been vertex, and there are a variety of factors which tend to produce this result.

**Secondary causes.**—*Contracted pelvis* is often responsible for this as for all other malpresentations. If the bi-parietal diameter of the head receives a check, and is nipped when entering the pelvis, the small end in front will be pushed down by the uterine force more easily than the wider end lying behind, and extension having once set in, each contraction will tend to increase it. These remarks apply equally to an *abnormally large child* and an average pelvis. The slight uterine contractions of pregnancy may bring about this extension, even before labour has begun, and if discovered at so early a stage, the position may be rectified by a doctor.

Another frequent cause of extension is *obliquity of the uterus*. The uterus very rarely runs quite straight down the middle of the pelvis, but more often has a slight obliquity of its body towards the right side. The propelling force of the uterus, therefore, instead of acting downwards in the middle line, comes to bear more hardly on the left, and pushes down with most vigour that part of the foetus lying on the left. In the second and third position of the vertex, the face is to the left, and, as we should expect to find, it is these positions which more generally turn into face presentations.

**Dead foetus.**—A principal cause of the flexion which normally produces vertex presentations is the natural tone of the muscles, the flexors being stronger than the extensors. When the foetus is dead, this natural tone is absent, and a face presentation is more likely to occur.

**Excess of the liquor amnii.**—This often prevents the head fixing in the pelvis, and if the membranes rupture suddenly while the patient is standing up, the rush of liquor is thought by some authorities to favour extension rather than flexion.

**Twins.**—All abnormal presentations are more common when two children occupy the uterus than when only one is present.

**Foetal deformities.**—Enlargement of the thyroid gland mechanically prevents flexion.

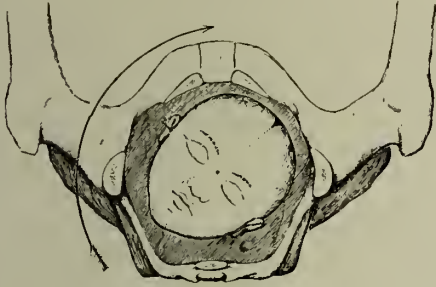
Extension is also favoured by the condition called *anencephalus*, in which the vault of the skull is absent.

**Positions.**—There are four positions in face presentations, each made out of the corresponding vertex position. The first is called right mento-posterior, and arises from an extended first position of the vertex. The chin lies to the right and behind, the cervico-vertical diameter ( $4\frac{1}{2}$  inches) is in the right oblique diameter of the pelvis; the child's back lies to the mother's left front. The second position is the left mento-posterior; the third the left mento-anterior; the fourth, the right mento-anterior.

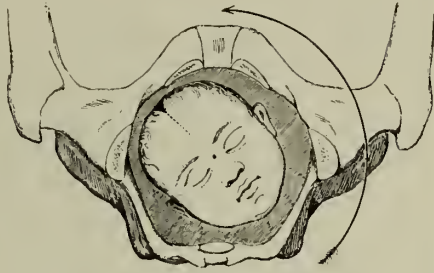
**Mechanism.**—The student will find it useful to remember that in naming the positions of the various presentations the word or denominator is invariably the name of that part of the child which, under favourable circumstances, will turn to the symphysis pubis, or front of the mother. The vertex positions are called occipito-anterior and occipito-posterior because it is hoped that the occiput will rotate to the front. The same holds good with pelvic presentations, the sacrum taking the place of the occiput. In the case of face presentations, it is of the greatest importance, if a normal and easy delivery is to be effected, that the chin should be directed to the front, and therefore we find the positions called respectively mento-posterior and mento-anterior, *mentum* being the Latin for chin.

The mechanism consists of descent, extension, internal rotation, flexion, external rotation. The causes of extension have already been given. The cause of *internal rotation* is, as we should expect to find, the meeting of the presenting part with the pelvic floor. If extension is complete, the chin will be the first part to reach it, and it will therefore be the chin which will be swept into the free space under the pubic arch. This will happen equally (with a well-extended chin) whether it be a third or a fourth position, in which case the chin will already be pointing to one or other foramen ovale and have only a short rotation to make, or whether it be a first or second position, when the chin will be directed towards a sacro-iliac synchondrosis and perform a long rotation through three-eighths of a circle.

**Flexion.**—The front of the neck becomes fixed against the pubes, and the head is born by a movement of flexion, the occiput being the last to escape from the perineum. After the head is born the case becomes exactly similar to one in that position of the vertex from which it originated, the shoulders are rotated in the pelvis, and delivered in the ordinary manner.



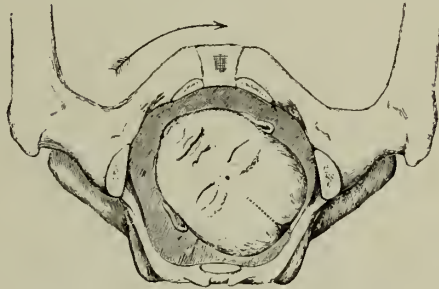
FIRST FACE PRESENTATION (FARABŒUF).



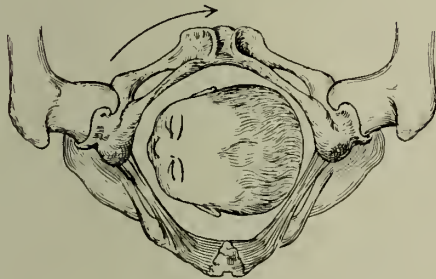
SECOND FACE PRESENTATION (FARABŒUF).



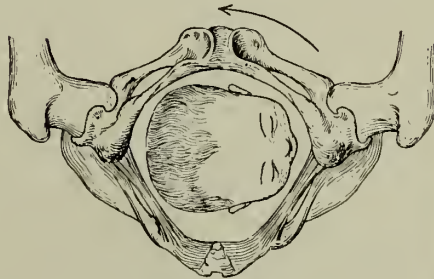
THIRD FACE PRESENTATION (FARABŒUF).



FOURTH FACE PRESENTATION (FARABŒUF).



FIRST BROW PRESENTATION.



SECOND BROW PRESENTATION.





**Prognosis for the child.**—The prognosis in face presentation is not very favourable to the child. In any circumstances, the pressure on the nerves and blood vessels in the front of the neck is great, and the probability of early rupture of the membranes will cause its body to be squeezed unduly by the uterine walls. When the chin fails to rotate to the front a solid wedge is formed by the thorax and head, which cannot be delivered unless it is an unusually small child, but will involve craniotomy.

**Dangers to the mother.**—The mother will suffer from the usual disadvantages accompanying a slow labour with premature rupture of the membranes, and will run increased risk of a lacerated perineum.

**Diagnosis.**—The midwife may receive the first indication that the presentation is abnormal from the patient's conversation. The absence of the relief occasioned by the sinking of the uterus will be noticed in this as in the other malpresentations, as also the weak and irregular pains.

*Diagnosis from abdominal examination.*—The abdomen will appear twisted and rather unusual in shape, the breech will be felt at the fundus, and the head at the lower segment of the uterus, but instead of fitting down into it, it will probably be found well above the pubes, and offering much greater resistance on one side than on the other. If the child's back is to the mother's front a deep groove will be felt between it and the head. If its face is turned to the front, a little pointed eminence, the chin, may be found. The foetal heart sounds will be rather higher than usual, and on the same side as the small parts; this is the only exception to the rule that they are most audible through the back of the child.

*Diagnosis from vaginal examination.*—Vaginally the membranes will be pouched, the presenting part high, and less hard and regular in form than usual. The examining finger will gradually be able to detect the orbital ridges (the upper part of the eye sockets), the mouth with its ridged roof, the chin and possibly an ear. It must not be forgotten that the chin is the key to the situation, and that therefore it is of the utmost importance to find out whether it is pointing to the front or the back. Great care must be taken in vaginal examinations not to rupture the membranes, nor to injure the eyes.

**Management of face presentations.**—As soon as she diagnoses a face presentation the midwife must send for the doctor. While waiting

for him she must keep the patient quiet, and not permit her to walk about, or strain, for fear of rupturing the membranes. Internal rotation, which is so essential to a natural delivery, is often slow in occurring, as the presenting part is small, and will not reach the pelvic floor until the whole head is well down in the cavity. If the midwife thinks that it has descended, she may make a second vaginal examination, and if she finds in a mento-posterior position that the chin has not rotated, she may, if no doctor be at hand, attempt to increase extension by hooking down the chin between a pain, and pushing up the forehead during a pain, using one finger as usual. Good extension is as necessary for a favourable rotation in face presentations as is good flexion in vertex. The caput will be over one eye and cheek, and extremely disfiguring in character. The mother must be reassured as to its ultimate disappearance, and the lower eyelid must be pulled down several times in the course of the day, as with so much swelling a tendency to ophthalmia might escape observation, until the pent-up discharge had destroyed the eyesight.

**Brow presentations** (Plate LXIX.).—When the head has become only partially extended, so that it is midway between flexion and extension, it is called a brow presentation. This is one of the most serious complications that can exist, and probably the one most frequently requiring craniotomy.

Abdominally it will of course greatly resemble a vertex presentation, but the experienced hand will easily detect the absence of flexion, and the head will lie well above the brim, besides being freely movable.

Vaginally the fingers will detect first the pouched membranes, and then the anterior fontanelle, possibly also an orbital ridge, and an ear. The treatment as far as the midwife is concerned will consist in keeping the patient quiet and lying down, and sending for the doctor. If she is perfectly certain it is a brow presentation, and also of the exact position, she may try to improve the latter by increasing flexion with her finger in the vagina, but much manipulation of this kind is to be deprecated, and may only be attempted when an exact diagnosis has been made.

She will be wise not to give an enema until the doctor arrives, either with brow or with transverse presentations, as the consequent straining will greatly increase the liability to premature rupture of the membranes, and also confirm the faulty position. With a face presentation she

may venture upon one, but only if a considerable degree of dilatation has taken place, and the head is in the cavity.

### III.—TRANSVERSE PRESENTATIONS

Under this heading are included all cases in which some part other than the head or the breech presents. They occur about once in 250 cases at full term, but much more frequently with premature children.

**Causation.**—*Premature and dead children.*—As we have said before, the frequency of head presentation is partly occasioned by the force



Fig. 106.—TRANSVERSE PRESENTATION.

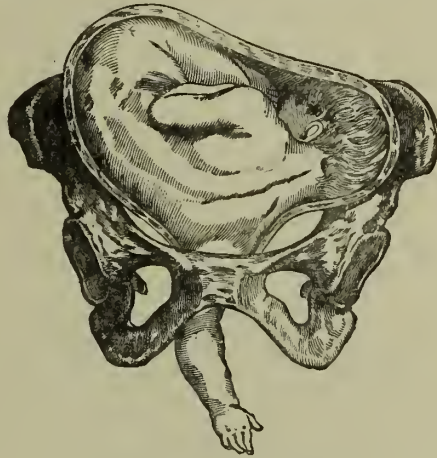


Fig. 107.—ANOTHER TRANSVERSE PRESENTATION.

of gravity. A full-term child that is not decomposed naturally floats head downwards in a fluid of the specific gravity of liquor amnii. With premature and decomposed children this does not occur. Moreover, until the foetus is seven months old, it is a small body floating more or less freely in a large amount of liquor amnii. It therefore moves its position freely, and is accommodated in almost any diameter. After the seventh month the child is much larger in relation to its surroundings, and the force of gravity having brought the head down low, the pressure of the abdominal and uterine walls will tend to fix it in the brim in whichever diameter fits it best.

*Excess of the liquor amnii* will have the same effect with a larger foetus.

*Obliquity of uterus.*—When the uterus lies very obliquely in the pelvis the foetal head will probably be deviated from lying exactly over the pelvic inlet and be found to one or other side, more or less in the iliac fossa. The more transverse the position, the more it will be increased by each uterine contraction.

*Contracted pelvis.*—The same result will be produced by a marked contraction of the brim. The head will be unable to engage in any diameter even after uterine contractions have set in strongly, and the head will gradually be forced to one side, where there is less resistance, some part of the body taking its place over the pelvic inlet.

*Twins.*—Transverse presentations are comparatively common with twins, especially in the case of the second child. The first having monopolised the brim of the pelvis, the second adapts itself to its position as best it may. A multipara with very lax, stretched abdominal walls is far more subject to this complication than a woman in her first or second labour.

*Placenta prævia.*—Any object which prevents the child's head from fitting down into the lower uterine segment is apt to change the normal presentation into a transverse. Placenta prævia is the most common of these causes. Tumours, either of the pelvic bones or of the soft parts, may also affect and obstruct the normal presentation.

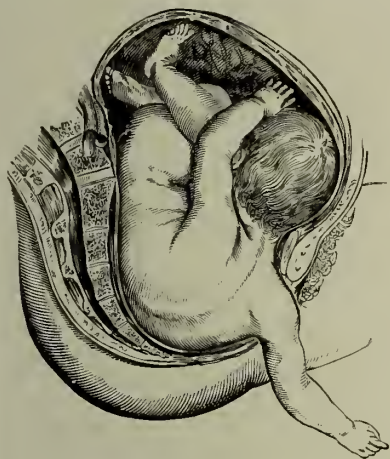
**Mechanism.**—There is no mechanism, properly speaking, in transverse cases, as with a normal child the effect of the uterine contractions will be merely to drive the shoulder lower into the birth canal, and so increase both the mother's danger and the doctor's difficulty. Except with tiny premature children natural delivery is impossible, and unless the patient is speedily relieved by medical aid, the case will become one of the worst forms of obstructed labour, and end in a ruptured uterus. If the foetus is very tiny it may deliver itself in one of four ways.

1. The contractions of the uterus may drive the head more to the centre, instead of, as is usual, more to the side. The head may, therefore, come to lie over the os although it did not at first. This is called *spontaneous rectification*, and it will only take place as long as the child is freely movable, the membranes unruptured, and labour not far advanced.

2. The uterus may by its contractions cause the foetus to make a somersault, its breech arriving at the os, and the head rising to the fundus. This is called *spontaneous version*.

3. A third course is known as *spontaneous evolution* (Plate LXX.).





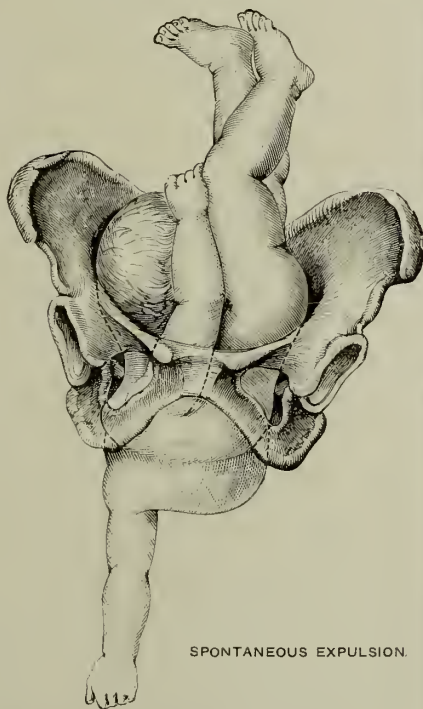
SPONTANEOUS EVOLUTION : COMMENCEMENT.



SPONTANEOUS EVOLUTION IN PROGRESS.



SPONTANEOUS EVOLUTION : TERMINATION



SPONTANEOUS EXPULSION.





The small shoulder and arm having been pushed well down into the vagina by the pains, the collar-bone becomes fixed under the pubic arch, and acts as a pivot on which the doubled-up body turns. The ribs gradually follow the arm, and are succeeded by the buttocks and legs, and after this the head and the second arm are expelled without difficulty.

4. *Spontaneous expulsion* (Plate LXX.) can only occur in the case of a small dead child. The muscles having lost their tone, the fœtus is doubled up from the waist backwards, the chest and abdomen are expelled together and followed by the head and legs.

**Diagnosis.**—From the preceding remarks it will be seen how urgent is the necessity that the midwife should be able to diagnose a transverse presentation, before the membranes rupture, and the shoulder is driven down the vagina. The student will do well to turn back to the section on breech presentations and read again the instructions given there (pages 199-201) on difficult diagnosis. A right conclusion should, however, have been attained by the *abdominal examination*, and the vaginal method only employed for confirmation. If the membranes have ruptured, the liquor will have run away with alarming and unusual celerity. In this case it will be easy to find the head in one iliac fossa, and the breech, not actually in the other, but lying very decidedly on the opposite side of the abdomen higher up. It must be remembered that the child does not lie exactly across the pelvis, in the sense that this line runs across the page, but obliquely, with the head not over the centre of the brim.

If the membranes are not ruptured and the resistance of the liquor and of the abdominal muscles is considerable, the condition is not so easy for the midwife to diagnose, although it is of the first importance that she should do so. In this case the measurements with the yard tape are very helpful. The circumference will be found to be perhaps 39 inches, 3 inches larger than normal, but still not very infrequent with very large children or twins. The convexity may be 13 inches, or less, a normal measurement, and therefore incompatible with a 9 lb. child or twins, unless the head is practically on the perineum. But the pelvic grip being put into practice, it becomes clear even to a person of very moderate experience that there is no fœtal part at all in the brim, that it all lies high, and has not begun to descend. The fœtal heart sounds will be heard low down.

*Vaginally*, the membranes if not ruptured will be found quite unusually pouched, and the presenting part quite unusually high, so that nothing short of two fingers can possibly reach it, even with the additional advantage to be gained by turning the patient from the side to the back. When it is reached the finger may detect one little sharp point of bone representing the shoulder, possibly in addition the irregular form of the scapula, and the armpit. Again, the presentation may suggest the feel of a miniature gridiron, in which case the ribs will be lying over the os, or the sharp elbow may be found, or again the hand, closely resembling the foot in its general outlines. The diagnosis may be greatly confused by the funis, which may be coiled round the limbs or be caught in loops, so that it is almost impossible to decide what lies behind.

It is the midwife's absolute duty to send for a doctor not only when she is certain that the child is presenting transversely, but also when she only *suspects* that such may be the case, and cannot verify her suspicions. If she is wrong nothing worse will follow than a little mockery or irritation on the part of the doctor, with a possible extra fee for the patient to pay. If she is right, but waits to make a little surer, she may have the death both of mother and of infant on her conscience. Let her write down all the points she notices during a thoroughly careful examination, and try to arrive at a clear conclusion. If she is still confused she will do well to send.

**Treatment of the case.**—With regard to the patient, while waiting for the doctor the treatment will be mainly negative. The midwife must not pass the catheter nor give an enema until his arrival, as such measures may excite more pains and provoke straining. She must not give food, as for the operation of version that will be necessary complete anæsthesia is advisable, and vomiting to be avoided. She should persuade the patient to lie on the same side as the child's head. The fundus will be on the opposite side, and being the heaviest part of the uterus will tend to sink down towards the bed, and so push the head more into the middle line.

The midwife must also prepare everything as already described, and will do well to boil some tape in addition for ten minutes, as a loop is not infrequently fastened round the infant's ankle after it has been turned in the uterus, to prevent it from being drawn up again.

She must soothe and reassure the patient, telling her that she is in no danger at present, although the case would become very serious if it

were neglected, and she may also, if the waiting is prolonged and the membranes are unruptured, attempt *external version*. For this the patient must lie on her back and the attendant must press the head towards the brim of the pelvis with one hand, and the breech towards the middle line of the fundus with the other. One steady continuous push is useless. The change will only be effected by a succession of small pushes, made between the pains. This is not very often successful, but can at least do no harm.

**Anæsthesia.**—If the doctor has been unable to find another practitioner to come with him, the midwife will have to be entrusted with the office of anæsthetist. It is therefore very necessary that she should know something about the method of administration. It is well to vaseline the patient's nose and cheeks, as chloroform is apt to burn the skin if given without a regular apparatus. Any false teeth must be removed, and the chest and neck left absolutely free from pressure. The bladder must be emptied first, and if the doctor can wait, the deferred enema may now be given. He will probably also listen to the heart. Chloroform is usually the anæsthetic employed. It requires a free admixture of air, and therefore is usually dropped into a handkerchief or piece of gauze laid lightly over the patient's nose and mouth. The patient must be flat on her back with her head on one side, and the anæsthetist should keep one finger of the left hand behind the angle of the lower jaw to keep it forward. If it falls back the tongue is apt to fall with it, and threaten to suffocate the patient. This should not be allowed to happen, but if it does it must be seized with the tongue forceps, or the fingers and a towel, and pulled forward. The anæsthetist must devote her whole attention to the condition of the patient, and not try to see what the doctor is doing. She must carefully watch her colour, respiration, and pulse the whole time, and if the patient becomes either blue or very pale, if the respirations become shallow and irregular, or if the pulse becomes very small and running or uneven, the doctor's attention must be at once called to the fact. The head must be kept perfectly flat for some hours after the anæsthetic is given.

#### IV.—FUNIS PRESENTATIONS

In some cases the funis or cord forms the presenting part. It may lie directly over the os before the membranes rupture; this is called funis presentation. It may come down suddenly when the membranes

rupture—into the vagina, or even outside the vulva; this is termed prolapse of the funis (Fig. 108). It may be gradually squeezed through with the presenting part, when the condition is known as expression of the cord.

**Causation.**—In any case, it is an indication that the presenting part does not accurately fit the pelvis, and that there is therefore room for the funis to pass. This may be due to a contracted pelvis, a malpresentation—either face, brow, breech, or transverse (the last two being the more common causes), an abnormally large head or an abnormally small foetus. Another of the symptoms of obstructed labour will probably be present, *i.e.*, the pouched membranes.

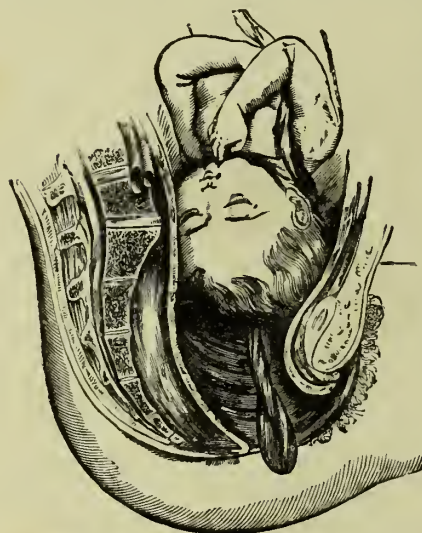


Fig. 108.—PROLAPSE OF THE FUNIS.  
(Galabin.)

The most frequent *immediate* cause of the prolapse of the cord is rupture of the membranes in a case where, for any reason, the presenting part does not accurately fit the pelvis. It is therefore a good plan, in such a case, to make a vaginal examination soon after the membranes have ruptured, especially if the patient was standing up when it occurred.

The descent of the cord has no particular significance for the mother, except as denoting some other complication. It is a very serious matter

for the child if the head is presenting, because it means that the head will be nipping the cord and stopping the circulation all the time that it is passing through the pelvis, and this will probably be a period of at least an hour, instead of a minute or two, as is the case with a favourable breech presentation. With the latter, prolapse is therefore a less alarming occurrence, although in any case the cord runs more risk of pressure, and the prolapse is therefore more dangerous to the child's life than if it remained behind and was born in the ordinary manner.

**Treatment.**—The first thing for a midwife to do when she diagnoses a cord presentation is to acquaint a doctor with the fact. She should



state in her summons whether she still feels it pulsating, as he will probably come much more quickly if he knows the child to be still alive than if he imagines that the cord has been down and the circulation stopped for some hours. She must do all in her power to keep the membranes unruptured, as they greatly diminish the pressure and help to preserve the child's life.

*Posturing.*—The patient must be placed on her face on the bed, resting upon her knees and elbows (Fig. 109). In this position the fundus will be the lowest part of the uterus, and the cord, which can move easily

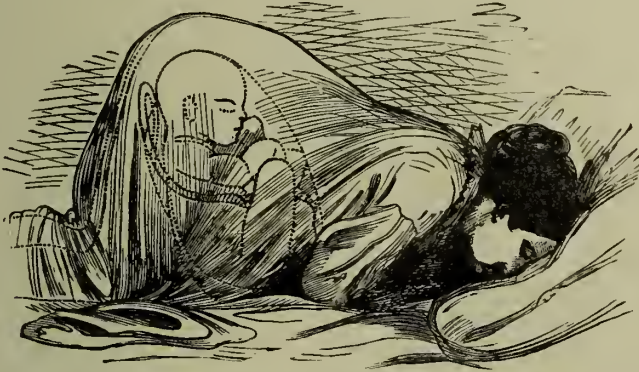


Fig. 109.—KNEE-CHEST POSITION FOR RECTIFICATION OF A PROLAPSED FUNIS.

in the bag of membranes, will sink down towards it. The patient should be made to preserve this attitude for twenty minutes, to give the funis time to settle down into the fundus, and she should then lie on the side opposite to that on which the cord came down, in the hope that the presenting part will now block the os and prevent a repetition of the disaster. If this occurs she should once more be put upon her knees and elbows. There is less strain on the membranes in this position, and therefore it acts beneficially in a second way by helping to preserve them.

The outlook for the child is much darker after the membranes are ruptured, and if its life is to be preserved, the child must either be instantly delivered or the cord must be replaced. The midwife can do nothing to hasten delivery, except to give the patient the pulley and bid her bear down, and this she may only do if the second stage of labour has been reached. It is not impossible, however, to replace the cord above the head, and the best method is to use the hand.

*Manual reposition of funis.*—The patient should again be placed on her knees and elbows, or else in the Trendelenburg position—with the buttocks raised on the back of an inverted chair, and the legs hanging down; the midwife must place her thumb and fingers together so as to form a cone, and pass them into the vagina. On its way up, her hand will meet the cord, which should be caught between the tips of the first and second fingers. The cord must then be carried up past the greatest diameter of the head during the interval of a pain, and kept there until after the next pain, when it is hoped that the presenting part will block the way and prevent its return. It is no use to carry it half-way up, or to leave a portion of it down. If the manipulation is to save the child's life it must be done boldly and efficiently.

*Another method.*—Another method for the replacement of the cord is to use a gum elastic catheter and a piece of tape. A hole being made in the catheter opposite the eye, and the catheter and tape then boiled, the tape must be passed through both holes and knotted loosely round the cord. The catheter is then passed up as high as it will go, the midwife holding the lower end in her hand, and desiring the patient again to lie on the side opposite to that on which the cord came down.

This method should also be tried in cases of expression of the cord. It will be more difficult to carry out, but as posturing the patient is then completely useless it is the only resource left.

## CHAPTER XLVII

### MULTIPLE PREGNANCY

Development of Twins—Diagnosis of Twin Pregnancy—Dangers—Management of Twin Labour.

**Dēvelopment of twins.**—It is a slightly abnormal condition when the human uterus contains two children, occurring about once in eighty cases. If the student will turn back to the chapter on the development of the embryo, she will see that the ovum, when it leaves the ovary, consists of a tiny nucleus surrounded by a yolk sac, and that the nucleus develops into the new creature. Occasionally an ovum contains two nuclei, and, if fertilised, this will become a multiple pregnancy, each nucleus representing a child. In such a case the twins will be of one sex, and share one placenta between them, each umbilical cord having a separate insertion. They will each have an amnion, but will be enclosed in the same chorion.

Sometimes, again, two separate ova are released simultaneously from the ovary, are fertilised within a short time of each other, and develop side by side in the uterus. The result again will, of course, be twins, but unlike the development of the two nuclei, the babies may now be either the same or of different sex, and each baby will be provided with its own chorion and its own placenta. Sometimes the twin placenta grow together in the uterus, so that it is impossible from mere inspection to tell whether there is one circulatory system or two.

**Diagnosis of twins.**—Twins are very apt to arrive prematurely, owing to the over-distension of the uterus. It will, therefore, arouse the midwife's suspicions if she is called to a case a month before full term and finds the abdominal circumference 36 inches or more, and the convexity correspondingly large. The same indications might occur in the condition called hydramnios (excess of liquor amnii), but in this case the child can be moved about with some freedom by the examining hand. With twins there will be very little mobility, as together they will probably make rather a tight fit. A good many limbs will be felt, and three larger

parts can usually be detected in the abdomen instead of the customary head or breech. There may be a sulcus, or furrow, running down the centre of the abdomen, foetal heart sounds will be heard quite distinctly on both sides, and there will be two points of maximum intensity. It is supposed to be the only certain sign of a multiple pregnancy if the rate of heart-beat at the two points is different. It is not, however, an easy matter to determine, as it will take a very practised ear to tell the difference between perhaps 132 and 140 beats per minute, heard through the abdominal wall.

**Dangers of twin pregnancy.**—The patient will probably suffer from considerable inertia in all three stages of labour, as the uterine fibres will be stretched beyond the point at which they contract best. Mal-presentations are common, though it is also common for both twins to present by the vertex. Occasionally the head of the second twin, fitting into the neck of the first, will occasion a wedge which will obstruct labour until the situation is remedied by the doctor. Another form of interlocking may occur when the first child presents by the breech and the second by the vertex. The after-coming head of the former may be blocked by the head of the second child, and cause a serious delay. The second child is not unfrequently lying transversely.

Multiple pregnancy also predisposes to albuminuria, from pressure on the renal veins.

**Management of a twin labour.**—The midwife is not obliged to send for a doctor merely on account of a twin labour, but she must be on the watch for a transverse presentation or for any form of locking, and obtain help in good time. Her management of the case will vary according to its nature.

If after the birth of the first child the placenta does not follow within half an hour, the midwife, having diagnosed the presentation by means of an abdominal examination, should make a vaginal examination to discover whether the second child is in front of the after-birth of the first child. If this is the case, and the pains are good, and if the presentation is breech or vertex, the membranes may be ruptured, and the labour will probably proceed to a favourable termination. If breech or vertex, and the pains have gone off, the midwife must wait for their return before rupturing the membranes. If the birth of the first child has been followed by the delivery of its placenta, then one ovum has come away complete, and the second ovum is still intact. It is quite

possible that it was fertilised later than the first one, and has not yet arrived at full term.

It will therefore be most unadvisable to hasten its delivery, and after waiting for several hours, and making the patient comfortable, if the pains have ceased, the midwife may leave, with injunctions to send again when they return. To rupture the membranes in the endeavour to "finish up the case," in these circumstances, would not only diminish the child's chance of a strong and healthy existence, but also subject the mother to the risk of dangerous post-partum hæmorrhage. Inertia in the second stage of labour is very frequently followed by inertia in the third stage. Occasionally one twin dies in the uterus some months before labour begins; it may be completely flattened by the growing foetus, and when born it has almost the appearance of thick paper. It is then called "*foetus papyraceus*."



## CHAPTER XLVIII

### POST-PARTUM HÆMORRHAGE

Predisposing Causes—Exciting Causes—Symptoms—Treatment—Cervical Laceration—Hæmorrhage from Vaginal Arteries—Collapse after Hæmorrhage—Treatment of Collapse.

*Primary* post-partum hæmorrhage is that which occurs within twenty-four hours of the birth of the child. Hæmorrhage that sets in later than this is known as *secondary*. Post-partum hæmorrhage proper occurs at the placental site; but the term is usually applied also to bleeding from injuries of the cervix and vagina, and this variety will be considered later on.

When the student first learns of the tortuous net-work of blood vessels opening into both the substance and the internal surface of the uterus (at the placental site)—the arteries given off almost directly from the aorta, and the widely gaping mouths of the veins—she will wonder not that some patients die of post-partum hæmorrhage, but that any survive.

Nature has, however, arranged a means whereby the loss of blood is usually limited to a small amount, from 2 to 10 ounces, and it is part of the midwife's duty to assist Nature in performing her work.

The uterus at full term measures 12 inches long. During the second stage, and immediately after the child is born, it shrinks to 6 inches. This it does by the processes already named of contraction and retraction, and by means of this shrinkage the mouths of the blood-vessels are closed.

**Predisposing causes.**—There are certain predisposing causes of post-partum hæmorrhage. A multipara is more liable to it than a primipara, especially one who has borne many children; a delicate woman or one who has had a prolonged labour will also be likely to lose in excess.

Over-distension of the uterus which occurs both with twins and hydramnios, ante-partum hæmorrhage, albuminuria, alcoholism, are other predisposing causes. Some women are known as hæmophiles,

or bleeders, and bleed freely at the slightest injury ; these will naturally be liable to considerable loss after delivery. Hæmorrhage is often increased by the administration of chloroform.

**Exciting causes.**—The midwife must not confuse the predisposing with the exciting causes. She is not responsible for the former, and cannot prevent them, but they should serve as a warning, so that she may be prepared to avert their consequences. The exciting causes are, on the contrary, largely due to her own action and mismanagement of the case. The most frequent is the improper treatment of the second and third stages of labour. The uterus must be emptied slowly, and only when contractions are present. If the attendant seizes the child's head or shoulders as soon as they appear, and drags the rest of its body forcibly into the world instead of leaving it to be expelled by the next pain, she will break this rule, and probably her action will be the direct cause of hæmorrhage. If she does not keep one hand on the fundus, and follow the uterus down firmly as it expels the child, she will permit blood clot to form behind the child, and lose an advantage which she will find it very difficult to recover.

If she attempts to hasten the delivery of the placenta before it has been expelled into the vagina, this may lead to retention of a part or the whole of the placenta, and sometimes to hour-glass contraction of the uterus. If she does not hold the uterus firmly until and for a while after the placenta is born, rubbing it at the fundus if it shows an undue inclination to dilate, she will again be favouring the formation of blood clot, and so cause the uterus to grow unwieldy and "out of hand." And finally, if she expresses the placenta during a period of relaxation, she will once more be breaking her rule, and emptying the uterus in the absence of pains. When violent post-partum hæmorrhage has already set in, it may be necessary to express in the absence of strong contractions, in order to prepare the way for further treatment, but not otherwise.

Other exciting causes are an over-full bladder or rectum, both of which should have been attended to earlier in labour ; also mental emotion, such as anger or fright ; also exertion on the part of the patient.

There is no surer way to convert a considerable loss into dangerous post-partum hæmorrhage than for the attendant to betray to the patient her own alarm, either by loud cries for help, agitated movements, or the terrified expression of her face. Occasionally, however, the exciting cause is one entirely beyond either the midwife's prevision or control.

*Adherent placenta.*—Some placentaë are adherent to the uterine wall, so that instead of separating and coming away within an hour or so of the child's birth, they remain firmly attached. It is extremely rare to find one that is adherent in every part; when it is, there will be no bleeding until efforts are made to detach it. More frequently, part of the placenta is adherent while the healthy part becomes detached; the uterus can neither expel its contents nor retract, and blood pours freely from the site. The decidual diseases giving rise to this condition are obscure, and the midwife can neither foretell nor prevent it. A woman who has once suffered from adherent placenta has undoubtedly a tendency to a repetition at her next labour, and it is wiser for the midwife to recommend her to engage the services of a doctor beforehand.

Many women are alarmed at the occurrence of pain on one or other side of the uterus during pregnancy, fearing lest it may betoken that the placenta has "grown to their side." They may be reassured on this point, as the pain is mostly neuralgic in origin, and has no connection with the placenta.

*Placenta succenturiata.*—Sometimes, again, the placenta itself comes away entire, but there may be left behind one or more of the small islands of placenta, "*placentaë succenturiataë*," which have developed separately on the chorion at a little distance from the true placenta. A round hole in the chorion with blood vessels running from the placenta to its margin is very diagnostic of this condition. Hæmorrhage arising from this cause or from retained membranes is more usually of the secondary variety, occurring after the midwife has left her patient, but this is not invariable.

**Symptoms.**—The first premonitory symptom of post-partum hæmorrhage is a *quickenèd pulse*; it is therefore of the first importance that a midwife should have carefully noted its rate and character several times during the early stages of labour. The pulse in a strong healthy young woman may continue slow and regular, even when she is in labour, and any variations that occur may all be within the normal limits of 60 to 80. But this is not always the case. If it began at 80, increases through a painful second stage to 108 or 112, and falls as soon as the child is born to 100, the heart will be acting much as one would wish, and the midwife may anticipate that it will again fall to 80 in the first quarter of an hour after delivery, and possibly 70 or less in the second. If on the other hand she finds that, beginning at 80, it decreases during

the second stage to 60 or thereabouts, it will be a somewhat unfavourable sign, indicating great exhaustion.

And further, if it suddenly leaps from 60 to 100, after the child is born, instead of being reassured as she was in the first instance when it fell from 112 to 100, the midwife must accept it as an indication that hæmorrhage is imminent, and act accordingly.

The next symptom will probably be an *increase in the size of the uterus*, irregular prominences being felt within it, testifying to the existence of blood clot. When the uterus becomes permanently relaxed and soft, so that its outline can no longer be felt, it requires only a minimum of care and experience to tell that retraction is not taking place. In such a case the diagnosis is probably assisted by the fact that blood is pouring away like water from a tap. When, however, concealed hæmorrhage is taking place, the midwife may be placidly holding or rubbing one of these prominences, secure in the belief that as she feels an outline, the whole of the uterus is equally well contracted, whereas as a matter of fact it is every moment increasing in size, and the patient is losing blood to a dangerous extent. It should be remembered that blood which has left the vessels has for all practical purposes left the patient; and that it is of no more use to her when lying clotted inside the uterus than it will be when lying outside on the bed.

The symptoms of post-partum hæmorrhage are therefore:—

1. A quickened pulse.
2. An enlarged uterus.
3. A flow of blood from the vulva.

The symptoms of collapse, the result of hæmorrhage, will be given later.

**Treatment.**—The midwife must invariably send for the doctor in a serious case of post-partum hæmorrhage. She must do so both because her rules require it, and because she will need his help in reviving the patient, but she must dismiss from her mind the idea that she is sending for him in order to stop the hæmorrhage. In severe cases a woman may lose her life from this cause in five minutes, and the attendant must therefore rely upon her own skill alone, and not wait for anyone else to come and stop the bleeding.

The patient will, of course, be lying quite flat on her back, the pillow having been removed as soon as the baby was born. When the usual flow that occurs after the birth of the child is increased, and threatens



to become severe, the first thing for the midwife to do is to *empty the uterus*. She will probably have her left hand on the fundus at the time, and placing her right hand above the other she must forcibly express all that is inside, either placenta, membranes, or clot. Having done so the uterus will feel smaller and more easily compressible by the hand, and she must concentrate her attention on so holding and kneading it that it never again relaxes to its former size. If the placenta fails to come away at the first vigorous expression, it will be wise to send immediately for the doctor; much valuable time is often lost in repeated attempts to express an adherent placenta. If the midwife is satisfied that the placenta and membranes have come away entire, she should now desire an attendant woman to measure out a teaspoonful of liquid extract of ergot (first holding up the bottle that she may read the label), and to give it to the patient in a little cold water. Ergot must *not* be given by the mouth if the patient is already in a state of collapse, as it may bring on fatal vomiting.

*Open windows.*—The window must be opened by the attendant to its very widest extent, and the room made as cool as possible.

*Hot douche.*—If the bleeding continues in spite of the midwife's utmost efforts to make the uterus contract by means of rubbing, she must next give a hot douche. The uterus must not be left for a moment, but the friend must be instructed to grasp it very firmly while the douche is prepared. In so great an emergency it is difficult to lay down a rule as to how much time may be used for disinfection. It is even more important than usual, as women are peculiarly liable to sepsis after hæmorrhage, and yet it is obviously unadvisable to spend ten minutes in scrubbing and disinfecting when the patient may be dead in five. It is at any rate always possible to give one hasty scrub, and soak the hands for a moment in extra strong lotion, perchloride of mercury 1 in 500, for instance. A clean napkin should be dipped in the same, and the vulva wiped with it, immediately before the introduction of the glass nozzle.

The midwife must make herself absolutely familiar beforehand with the use of her douching apparatus; she will need it very seldom, and when she does a life may hang upon her actions. It is therefore nothing short of criminal laziness to wait for this moment to discover that she only imperfectly understands how to use it. Having mixed her lotion at 120° F., and spread two clean napkins wrung out in cold lotion over the patient's perineum and thighs to save discomfort from the heat,



she must run the lotion through till air is excluded, introduce the nozzle, and again seize the fundus firmly with her left hand, while the attendant woman raises the douche jug to a suitable height. The uterus will probably be felt to tighten and contract under the stimulation of the hot fluid; the patient will almost certainly find the temperature uncomfortably high, but she must be assured that it is really necessary for her safety.

Whenever possible the douche thermometer should be used. If the hæmorrhage is so excessive that the midwife dare not wait for this, she should pour a little of the fluid over her own hand, and see if it is just bearable. She must *never* introduce her finger into the douche can for this purpose.

*Bi-manual compression* (Fig. 110).—If the hæmorrhage still continues, the midwife must proceed to more drastic measures. Having again given as much time to disinfection as she dares, she must pass her left hand into the vagina, the fingers flexed on the palm and lying uppermost. The hand does not pass through the os, but the knuckles lie against the front wall of the uterus. The right hand, having first expressed for clot, is sunk down behind the fundus, which it flexes firmly forward and down, the whole uterus thus lying compressed between the two hands.

The uterus is not now being stimulated to contract; it has declined to do so, and the only chance for the patient's life lies in this bi-manual compression of the uterus, which mechanically closes the mouths of the blood vessels. It must be held thus for a considerable while, in order to give the uterus time to manufacture a new supply of force; this is extremely tiring for the midwife, but by means of supporting her left elbow on the bed, and occasionally allowing the attendant to compress the uterus abdominally, she will save her own strength as much as possible.

*Hypodermic injection of ergotin or ernutin.*—Another useful remedy for

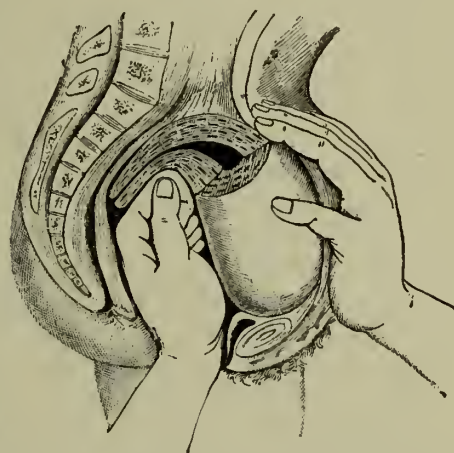


Fig. 110.—BI-MANUAL COMPRESSION IN POST-PARTUM HÆMORRHAGE.

post-partum hæmorrhage is a hypodermic injection of ergotin or ernutin ; this is given deep into the gluteal muscles (buttocks), and not run along close under the skin, as is the usual custom with these injections.

*Removal of adherent placenta.*—In cases of adherent placenta, where the loss is so violent that it is impossible to wait for the doctor, the midwife must pass her disinfected hand into the uterus in the shape of a cone in order to remove it. The placenta must not be torn away from the uterine wall, but the finger tips introduced behind the edge of it, and moved from side to side. The placenta will thus be separated gradually, and when free must be drawn out.

**Cervical laceration.**—Dangerous bleeding occasionally occurs from tears of the cervix, especially in breech cases, when the head has been extracted before dilatation was complete. It may be diagnosed by the fact of the hæmorrhage occurring when the uterus is small and well contracted. The midwife must send for the doctor, and meantime plug the vagina very firmly with anything that she can make aseptic. It is not a bad plan to boil the baby clothes for a few minutes in a saucepan, and having tied up the neck and sleeves of the gown so as to form a bag, to introduce it into the vagina and pack all the other clothes inside. The idea is to stop the hæmorrhage by direct pressure, and therefore they must be pressed in very firmly, and a binder and T-bandage applied as tightly as possible.

**Hæmorrhage from vaginal arteries.**—There may also be arterial bleeding after delivery, from a torn vaginal blood vessel. In this case the midwife will probably be able to detect the spot, and to compress with an aseptic hand, or possibly to seize the ends of the artery with artery forceps and leave them on till the doctor arrives.

**Collapse after hæmorrhage.**—The danger is by no means over when the hæmorrhage has ceased, as the patient is then liable to die from collapse and loss of fluid in the body, which may lead to heart failure. The *symptoms* will be the usual ones of collapse. The woman will be pale and cold, and very probably bathed in a cold sweat. She will be restless, tossing about and sighing, and very likely will complain of feeling faint ; if she adds that she cannot see, and that the room is dark, it should be regarded as a symptom of the utmost gravity. She will have a great tendency to vomit, which will put an additional strain on the heart, and may cause a return of the hæmorrhage. Her pulse will be very small and rapid, and may become imperceptible. Collapse may not

follow the hæmorrhage immediately, but may occur after the patient seems restored.

**Treatment of collapse.**—It is important that the treatment for collapse should not begin until the hæmorrhage has ceased, and the midwife must have a clearly defined scheme in her mind of what she is going to do, and how she is going to do it.

The room must be made warm after the bleeding has stopped, although there must still be a window open to ensure a good supply of oxygen. Three or four hot-water bottles should have been made ready by the attendant, and they must now be packed round the arms, legs, and feet, well protected to avoid burning the skin. If there are no serviceable bottles to be obtained, bricks may be heated in the oven for the same purpose, or pillow-cases full of bran or salt. There is often a sliding oven shelf which can be taken out, wrapped in flannel, and laid beneath the legs. It is well to raise the foot of the bed, by standing the legs on bricks, books, or chairs, so that the lower portion of the patient is higher than her chest, as all the available blood in the body is urgently needed by the heart and brain.

The principal points to which the midwife's attention should be directed are :—

1. To restore fluids to the circulation.
2. To stimulate the heart if it shows signs of failure.
3. To prevent the patient from being sick.

The most obvious way to restore fluids is to give them by the mouth, but unfortunately there is so much risk of vomiting that in very serious cases this cannot at first be tried. A saline injection should be given instead by the rectum. The best apparatus is the funnel of a cheap glass syringe, a piece of indiarubber tubing, and a No. 8 gum elastic male catheter, all securely tied together, and brought to the bedside in a basin of *hot* water.

A teaspoonful of common salt must be dissolved in a pint of warm water (100° F.), and 1 oz. of brandy may be added, if stimulation of the heart seems called for. The catheter, which will have been softened by the hot water, must be vaselined so that it may slide easily. The nurse must now pour a sufficient quantity of water through the apparatus to expel air, nip the tubing quickly, and pass the catheter up the rectum for two-thirds of its length, filling up the funnel constantly, before it is quite empty, from the jug. The injection must be given with the patient

lying on her back, and very slowly, or it will not be retained ; quite half an hour should be allowed for the administration of a pint, and a dry pad must then be left underneath. If there is no inclination to sickness, fluids may now be given by the mouth, but with extreme caution. A teaspoonful of very hot water may first be tried, and if successful, a couple more at the end of a few minutes. After a time, if there is no sickness, a little panopepton or egg albumen may be given, but milk should be avoided at first, as the stomach will often retain it for a while without making any attempt to digest it, and then return big heavy curds with violent retching. When it is given, it must be well diluted with water. The rules to be observed after collapse are :—

1. The patient must not drink, but be fed slowly with a teaspoon.
2. The first thing taken must be very hot water.
3. Nothing tepid may be offered. All nourishment must be fluid, and either stinging hot, or ice cold.
4. Egg albumen or concentrated meat essences are less liable to cause sickness than milk. Occasionally a mustard leaf over the stomach will correct a tendency to sickness.

After post-partum hæmorrhage, the patient should be given saline injections twice a day for two or three days. She should have not only an abundant light diet with extra milk, but also plenty of water to drink. She must be kept in bed for a month, and every care should be taken to avoid sepsis, to which there will be a special tendency, particularly in the direction of septic thrombosis and phlegmasia alba dolens. Involution will probably be very slow.



## CHAPTER XLIX

### INTERRUPTED PREGNANCY

Definitions—Causes of Abortion—Treatment to Avert Abortion—Treatment of Inevitable Abortion—After-care—Molar Pregnancy—Treatment—Ectopic Gestation.

**Definition of terms.**—Pregnancy terminating at the end of the fourth month is usually known as abortion, while that which ends between the fourth and seventh month is known as miscarriage. These are, however, arbitrary terms, and need not be strictly adhered to; it is better in either case to use the word “miscarriage” to the patient.

There are several other terms used in connection with the subject which should be familiar to the midwife.

In *threatened abortion* some of the symptoms of abortion occur, but under careful treatment pass away again, and the pregnancy continues till full term.

*Inevitable abortion.*—Here the reverse is the case. The only way for a midwife to decide with which condition she has to deal is to make a vaginal examination. If part of the ovum is bulging through the partially dilated internal os, she should recognise that a reflex activity has been excited which she cannot hope to allay.

In *complete abortion* the entire ovum has been passed, whereas in *incomplete abortion* a portion, probably placental, is retained.

*Induced abortion* is an operation to be performed by a doctor, and that only when he considers that for some reason the continuation of pregnancy will endanger the mother's life. It is always a very serious operation, and if the midwife is allowed to act as his assistant, she must take every possible antiseptic precaution with regard to herself and her clothing, as well as the room, bedding, and personal cleanliness of the patient, and the appliances used.

*Criminal abortion* is the term used for any attempt made to shorten pregnancy by anyone other than a qualified practitioner, and for an insufficient reason. Midwives are frequently consulted by their patients



on the best means of procuring abortion, not only by unmarried girls, but also by married women, whose families are larger than might be wished, or who object altogether to bearing children. The midwife must be quite clear on two points. Firstly, that the fertilised ovum is alive from the first, and that therefore any attempt to do away with it is an endeavour to take life, and is morally indefensible. Secondly, that an attempt to induce abortion is a criminal offence, for which she as well as the patient will be severely punished, if it is discovered.\*

In *missed abortion* the embryo dies, symptoms of threatened abortion occur and subside, and the ovum remains in the uterus for a varying length of time.

The rule of the Central Midwives Board with regard to abortion is as follows: "In all cases of abortion a midwife must explain that the case is one in which the attendance of a registered medical practitioner is required, and must hand to the husband or the nearest relative or friend present the form of requesting medical help, properly filled up and signed by her, in order that this may be immediately forwarded to the medical practitioner. If for any reason the services of a registered medical practitioner be not available, the midwife must, if the case be one of emergency, remain with the patient and do her best for her until the registered medical practitioner arrives, or until the emergency is over."

Cases of interrupted pregnancy occur at least as often as one in fifteen times, and as women are prone to feel that abortions are of no consequence, and that no one need be called to their help except a neighbour, it is most important that the midwife should attend whenever she gets the chance, even if the patient declines to accept her advice, and immediately summon a doctor.

**Causes of abortion.**—The principal causes of abortion are: syphilis, endometritis, illness of any kind, over-exertion, injury, fright. Strong purgatives should be avoided during pregnancy, especially those containing aloes or Epsom salts, as they, along with castor oil and some other drugs, tend to induce abortion. Douching and very hot baths are dangerous for the same reason. Some patients have the so-called habit of aborting; they must be urgently begged to see a doctor, as a course of medicine at the beginning of pregnancy may enable them to carry the child to full term. In other cases it may be advisable to enter a

\* See also Vol. I., pp. 44-45.

gynæcological hospital after the uterus has been emptied, for the minor operation of curetting.

**Treatment.**—The treatment for abortion varies according as to whether it can or cannot be averted. There may be some uterine contractions and hæmorrhage, but if they are not very severe, the os is not over the shilling size, and the ovum is not protruding through the internal os, it may be merely a threatening which will yield to treatment.

*To avert abortion.*—The patient must be kept absolutely in bed, and waited on hand and foot. Diet should be fluid and cold, and mild aperients may be given. Opium is the best drug for checking uterine action, but it is well to have the permission of the doctor before this is given. The patient must remain in bed for several days after all symptoms have subsided.

*Inevitable abortion.*—In cases where abortion is inevitable, an opposite line of treatment should be followed, and the uterus stimulated to contract and empty itself as soon as possible. If a doctor is not available, a drachm of liquid extract of ergot should be given by the mouth and a tight binder applied, friction at the fundus being also very helpful. The membranes should not be ruptured, as the ovum is more likely to come away intact if it preserves its integrity.

If the hæmorrhage is very severe, a douche at 120° F. may be given while waiting for the doctor. This may be followed by plugging, but only if the vaginal discharge is perfectly inoffensive in character.

A miscarriage is sometimes several days in operation, and the uterus being partially open, the products are apt to decompose before the patient is delivered, if the membranes rupture early. If the ovum comes away quickly and entire, there is no difficulty in assuring oneself that nothing is left behind, but in any case of doubt a midwife will be wise to insist that a doctor should immediately be shown all that has passed. It is very common for a portion of the placenta and membranes to be retained, especially about the end of the third month. Sepsis is, therefore, a very frequent sequel of a case of abortion, and it is not uncommon for a doctor to make sure that the uterus is thoroughly emptied by scraping it (curetting) either with an instrument or with the finger, the latter being by far the safer method.

He will probably conclude his operations by giving an intra-uterine douche through a special double-channelled nozzle. The patient's

genitals must be thoroughly cleansed before the operation, and it is well to give a vaginal douche before the intra-uterine one. The approach to the uterus must be thoroughly cleansed before anything is allowed to pass up into it.

**After-care.**—It is often a difficult matter to persuade the patient to remain in bed after a simple abortion, but no effort should be spared to this end. Many women suffer to the end of their lives from chronic sub-involution, and uterine displacement, and temporarily from pelvic inflammation, in consequence of getting up too soon, and the risks they run should be thoroughly explained to them by the midwife.

**Molar pregnancy.**—Occasionally the death of the embryo is followed by an outpouring of blood between the chorion and amnion. The blood-clot becomes firm and tough, so that the ovum is passed as a firm, red mass about the size of a hen's egg. This is called a blood mole or fleshy mole.

If the mole is cut through, a small amniotic cavity is discovered, which may or may not contain the embryo. In some cases the latter becomes absorbed and disappears, in others it is macerated, *i.e.*, soft, flabby, and discoloured, with a peeling and possibly blebbed surface. Sometimes, again, the foetus shrivels up, and becomes mummified, and sometimes, again, it is calcified, and becomes hard and stony, when it is called a *lithopædion*. The symptoms of this condition are the sudden abatement and cessation of the symptoms of pregnancy; the abdomen ceases to enlarge, the breasts lose their firmness and become flaccid, and after a certain time pains and hæmorrhage, the usual signs of abortion, set in.

**Hydatidiform mole.**—Another variety of molar pregnancy is a hydatidiform mole. This arises from a disease of the chorion, which develops a mass of small white sago-like bodies, either over its entire surface or at the placental site only. Each body is usually a thin-walled cyst, of a size varying from a grape to a pea. The entire mass may be the size of a man's head, and is usually interspersed with small blood-clot.

The symptoms are pain, vomiting, albuminuria, and the very rapid growth of the uterus, but they are not always present. Occasionally dangerous hæmorrhage sets in, the growth having affected the walls of the blood vessels. The only certain sign is comparatively rare—*i.e.*, a thin discharge containing small cysts.

**Treatment.**—While waiting for the doctor the midwife should give

liquid extract of ergot, 1 drachm, and a vaginal douche at a temperature of 120° F., and seek to stimulate the uterus to contract by friction at the fundus. The prognosis is not good, the mortality standing at 13 per cent., the principal dangers being hæmorrhage, septic infection, and uterine perforation with peritonitis.

**Ectopic gestation.**—This is also known as extra-uterine gestation. It is one of the most dangerous complications of pregnancy, and is usually not diagnosed until the patient is in a dying condition. It arises from the development of the fertilised ovum in the Fallopian tube instead of in the uterus. Occasionally it dies there and remains quiescent; sometimes it is extruded into the peritoneal cavity, but more often the tube ruptures during the second or third month. The patient will almost certainly die, either of shock within a few hours, or else of peritonitis. There is just a chance that she may live, if the midwife acts with wisdom and promptitude.

*Symptoms and treatment.*—Tubal pregnancy would be suspected if with general signs of early pregnancy there were attacks of spasmodic pain and irregular hæmorrhage. Rupture of the tube would be marked by a sudden attack of agonising pain, with collapse and signs of internal hæmorrhage. The patient will be pale and cold, the pulse thready, the general condition one of the utmost gravity even to an inexperienced eye.

The midwife must instantly summon a doctor with a message of the greatest urgency, and then concentrate her powers on keeping the patient alive till he comes. She must be wrapped up with hot blankets and bottles, kept quiet in bed, etc.

The doctor will probably order the removal of the patient to the nearest hospital or infirmary, as immediate operation is necessary.



## CHAPTER L

### ANTE-PARTUM HÆMORRHAGE

Accidental Hæmorrhage: Symptoms of Concealed Hæmorrhage—Prognosis—Treatment of Severe Accidental Hæmorrhage. Placenta Prævia: Varieties—Causation—Complications—Diagnosis—Treatment—Dangers to the Patient—To the Child—Treatment while waiting for the Doctor.

HÆMORRHAGE occurring in the earlier part of pregnancy is not included in this class, but comes under the heading of abortion or miscarriage. Any bleeding that occurs after the thirtieth week—that is to say, roughly speaking, after the child is viable—is known as ante-partum hæmorrhage, and may be divided into *accidental* and *unavoidable hæmorrhage*. A third possibility is that loss may occur from a diseased cervix, ruptured varicose veins, or from some wound of the genitals; but these are comparatively infrequent, and need not detain us here.

Both accidental and unavoidable hæmorrhage occur at the placental site, but here the similarity ends. The former is produced by the partial separation of a normally situated placenta—that is to say, one which has developed in the upper part or body of the uterus.

Unavoidable hæmorrhage is so called because it occurs when the placenta has developed in the lower uterine segment, sometimes called the dangerous zone. In these circumstances the contractions of the uterus which occasion the dilatation of the lower segment at the same time separate the placenta from the uterine wall, and some amount of hæmorrhage is therefore unavoidable before delivery can take place.

### ACCIDENTAL HÆMORRHAGE

The causes of this are obscure. Not infrequently some violent strain, lifting a heavy wash-tub or saucepan, or reaching after some object above the head may originate the trouble.

Sometimes, again, mental emotion or anger may operate in the same way, and at other times the patient may have had neither strain nor excitement to account for it, but be quietly asleep when the bleeding



begins. Occasionally the trouble has evidently been started by some event occurring two or three days before the real hæmorrhage. A fragment of placenta will have been detached, and a blood-clot formed in consequence between it and the uterine wall; the contractions of pregnancy will squeeze this flat, and by enlarging its area will detach another small portion of placenta, and so the mischief will grow.

When the blood which flows in consequence of this detachment appears at the vulva the diagnosis is easy, but this is not always the case. Very often the clots collect between the placenta and membranes and the uterine wall, and the condition of the patient has become very serious before it is detected. This is known as *concealed hæmorrhage*.

**Symptoms of concealed hæmorrhage.**—The symptoms are pallor and exhaustion, a tense hard uterus, and probably a quick pulse. Very likely there will be no regular intermittent contractions, but the abdomen will be tender and painful, and the great distension will occasion a distressing, dragging sensation. Possibly the first thing to be noticed will be great collapse and exhaustion without apparent cause. This is also diagnostic of a ruptured uterus, but there need be no confusion, as the latter practically only occurs after some hours of very strong labour.

**Prognosis in accidental hæmorrhage.**—The prognosis for both mother and child in serious cases of ante-partum hæmorrhage is a bad one. The most hopeful statistics give the maternal mortality at 32 per cent., and the infantile at 85. Other authorities consider that half the mothers die, and 94 out of every 100 of the children. The great danger arises from the fact that it is impossible to reach the site of the bleeding. The way is blocked by the child and placenta, and until the uterus is emptied, very little can be done to stop the hæmorrhage.

**Degree of ante-partum hæmorrhage.**—There are, however, many degrees of ante-partum hæmorrhage, and the midwife's management of the case will depend largely on its urgency. It may be a mere threatening easily checked by complete rest in bed; in such a case the patient should be restricted to cold milk for a time, and visited daily to see if there is any recurrence.

The bleeding may be sufficiently established to render necessary an immediate summons to a doctor, but still not alarming in its character. The midwife will again keep the patient lying quite still in bed, give her

hot milk, apply a tight binder, and endeavour to excite contractions by means of friction at the fundus.

**Treatment of severe ante-partum hæmorrhage.**—If the hæmorrhage becomes more profuse, or even continues steadily, and the doctor's arrival is delayed, the midwife must proceed to more drastic measures. She may give a douche at a temperature of 120° F., and then make a vaginal examination. The finger must sweep round inside the os as much as possible in order to separate the membranes, and allow of the free passage of clots. If the os is partially dilated, and either vertex or breech presents, and *if pains have set in*, the membranes should be ruptured. The escape of the liquor amnii will lessen the uterine pressure, and the uterus will contract into a smaller body, thus reducing the size of the bleeding area. If pains are not present, the membranes must on no account be ruptured, as the decrease in the uterine pressure will encourage a greater flow of blood, and the extra space will rapidly be filled by clot. Ten grains of sulphate of quinine may be given, as this drug greatly promotes contraction, and it may be followed in half an hour by another ten.

If the child is not full term and presents by the head or breech, and if the hæmorrhage is not of a very alarming character, a drachm of the liquid extract of ergot may be substituted for the quinine. It is far more powerful in its action, so much so that if labour is obstructed in any way, either by contracted pelvis, abnormal fœtus, or malpresentation, the pains excited by it may rupture the uterus. This is the reason why it must never be given before the child is born except under the conditions we have enumerated.

If there are no pains, or if these remedies fail, there remains nothing to be done but to plug the vagina, in the hope of exciting reflex uterine contractions. The plug should reach through the os, and as far into the uterus as possible. It should, if possible, be of sterilised gauze, but as it is highly improbable that the midwife will have at hand a sufficient quantity, she should boil and use any strips of soft linen that she can find. The method of doing so, and the possibility of using the baby's clothes, have already been referred to, in connection with plugging for hæmorrhage from a cervical laceration (p. 224).

On the arrival of the doctor the midwife will be relieved from her terrible responsibility, and becomes merely his handmaid; but she should try to understand and forestall his needs. If the os is not dilated he may use bags of some kind for the purpose—either Barnes' or Cham-

petier de Ribes'. Having placed it in position, he will fill it with weak warm lotion which should be in readiness. A special instrument is used for placing the bag in position, and both will require careful sterilisation beforehand. The lotion is introduced by means of a Higginson syringe. The syringe used for enemata must not be employed, but a new one, kept for the purpose.

The midwife must bear in mind that ante-partum hæmorrhage predisposes both to post-partum hæmorrhage and to sepsis, and she must therefore be doubly on her guard against these disasters.

#### UNAVOIDABLE HÆMORRHAGE (PLACENTA PRÆVIA, Fig. III)

The dilatation of the lower uterine segment mechanically detaches the placenta, and each new contraction tends to detach another lobe, and to renew the bleeding. It also, however, drives the presenting part against the blood vessels, and helps them to contract, so that it is of the utmost importance that the uterine contractions should be strong.

**Varieties of placenta prævia.**—There are four different ways in which the placenta may be situated, in a low implantation, all of which are known by the name of placenta prævia:—

1. *Centralis*, when the placenta covers the os, even after dilatation has occurred.

2. *Partialis*, when it partially covers the os.

3. *Marginalis*, when it reaches the margin of the os.

4. *Lateralis*, when it is situated in the lower segment of the uterus, but does not actually reach the os uteri.

The more centrally it is situated, the greater the danger to the mother.

**Causation.**—Placenta prævia occurs most frequently in women who have had a hard life and borne many children, and even more in those who have suffered from repeated abortions. A uterus that has never



Fig. III.—PLACENTA PRÆVIA.  
(Galabin.)



regained tone since its last pregnancy, but remains large and flabby, is liable to allow the little ovum to fall down towards its lower extremity, instead of retaining it near the opening of the Fallopian tube by the healthy folds of mucous membrane, through which it promptly burrows. It will be still more liable to fall into the lower segment if the mucous membrane itself is diseased or inflamed, a condition known as endometritis, which frequently gives rise to abortion.

**Complications of placenta prævia.**—A placenta prævia is often itself somewhat abnormal in character, being thin and spread over a large area—possibly with detached islands of placental tissue occurring in the chorion. It is also not infrequently rather firmly adherent.

The fact that the placenta occupies the space above the os favours the occurrence of malpresentations, and the funis, being already low, is apt to present by the side of the placenta.

By preventing the even pressure of the membranes, there is interference with the normal dilatation of the os, and the labour is usually very slow, with weak, irregular, ineffective contractions, accompanied by a varying degree of hæmorrhage. This may be most alarming in character, the patient's life being endangered by a few minutes' flow, or it may trickle away in very small quantities at a time, danger arising only from the constant repetition. A continuous running, however slight, is always fraught with great possibilities of danger, since it will inevitably reduce the vitality and resisting power of the patient, and may at any moment be succeeded by a more violent onset.

**Diagnosis.**—The occurrence of a placenta prævia can only be ascertained by vaginal examination. If the midwife is summoned to a patient who is losing, either before or at the beginning of labour, she will naturally be fully alive to the possibility of its existence, and the examining finger will begin its work with a full consciousness of what it is seeking for. If there is still cervix it will probably feel boggy, and the presenting part will be found—even through the uterine wall—more to one side than the other, its outline possibly obscured by a soft intervening mass. If the os is partly dilated, the placental lobes will be detected; they are sometimes mistaken for blood-clot, but can be distinguished by their spongy texture, less smooth, and less easily broken up than the latter.

**Treatment.**—Whenever the midwife suspects that she has to deal with a case of placenta prævia, she must immediately summon the doctor, however slight the bleeding, and even in the absence of pains.

He may decide to induce labour, or he may prefer to wait until there is more chance of a living child. There is something to be said in favour of both courses, but in any case the responsibility is his alone ; he will be in a better position to weigh the conflicting considerations than the midwife, and her duty will consist in faithfully carrying out his wishes, and loyally upholding his authority to the patient and her friends. It will be wise, if an expectant policy is adopted, to keep the patient under constant supervision, as she will be liable to dangerous attacks of hæmorrhage until she is delivered.

**Dangers to the patient.**—The prognosis is best if the hæmorrhage occurs at full term, as it is then easier to dilate the os and to empty the uterus. But it is never good, as there is risk of death not only from hæmorrhage but also from three distinct causes of septic infection :

1. The usual tendency to absorption arising from empty blood vessels and impoverished blood supply.
2. The low position of the placental site, which causes it to be easily accessible to germs of every kind from the surroundings of the patient.
3. The manual or instrumental interference that may have been found necessary during delivery.

If the placenta was partially adherent a fourth danger is added : *i.e.*, the retention of some placental fibres, which will only separate by a process of decomposition. The more central the implantation, the earlier the hæmorrhage will occur, and the greater will be the danger.

**Dangers to the child.**—The prognosis for the child is also not good. It may lose its life from the asphyxia attendant on the early separation of the placenta, or from that accompanying malpresentation by reason of pressure on the cord—or from the mere fact of premature delivery.

**Treatment while waiting for doctor.**—The midwife's treatment in cases of urgent unavoidable hæmorrhage, while waiting for the doctor, is very similar to that in the accidental variety.

If the patient is not in labour, she may give a hot douche (120° F.), apply a tight binder, and if these measures fail, plug the vagina, not forgetting that to do so without fastening a *very* firm T-bandage to the tight binder is a complete waste of time.

If the os is partly dilated, the vertex or breech presenting, and if good contractions are present, she may rupture the membranes. The most favourable presentation in this case will be breech, as she may then seize a leg and draw it gently but firmly down outside the vagina, either holding



it or securing it with tape round the mother's thigh. The child's thigh will then act as a very efficient plug, and press directly on the bleeding area. The midwife must not try to extract the infant through a partially dilated os ; she must only bring the leg down to act as a plug.

If the child is small, the os partly dilated, and the vertex or breech presenting, she may give liquid extract of ergot, 1 drachm ; but only when she is satisfied as to the presence of these three conditions. As with accidental hæmorrhage, if there is any doubt as to the easy passage of the child through the pelvis, it is wise to try the safer if less effectual remedy of sulphate of quinine, gr. x. If the patient is in a very collapsed condition, the midwife will employ some of her waiting time profitably by giving a saline injection *per rectum*, and a hypodermic injection of strychnine, 5 minims.

The doctor will probably dilate the os manually rather than with De Ribes' bag, as its introduction in this case might lead to sudden and dangerous separation of the placenta. He will probably turn the child, if the vertex presents, and bring down a leg. Remembering this, the midwife will abstain from either rupturing the membranes or giving ergot, except in cases of real urgency, as to do so renders turning both dangerous and difficult, and sometimes makes it impossible.

With regard to the two rare classes of bleeding before labour, mentioned at the beginning of the chapter, a **diseased cervix** will probably be revealed by vaginal examination. A hot douche and plugging will probably be indicated. If there is hæmorrhage from a **ruptured blood vessel at the vulva**, the midwife must press a clean pad on to the bleeding spot, compressing it against a bone. The doctor must, of course, be immediately summoned in both cases.

## CHAPTER LI

### ECLAMPSIA

Albuminuria as a Premonitory Symptom—Other Symptoms of Eclampsia—Convulsions—Prognosis—Treatment—After-treatment.

ECLAMPSIA is an acute disease connected with child-bearing, and may occur either in pregnancy, labour, or the puerperium. The causes which bring it about are still somewhat obscure, but it is certain that the immediate or primary cause is the retention of some poisonous products in the blood. If this is so, we should expect to find that when the existence of these products has been detected early, the onset of eclampsia may be averted by treatment which forces the system to throw out the poison; this is actually the case.

**Albuminuria.**—Albuminuria is the most constant and often the earliest premonitory symptom of eclampsia; it is in itself a disease, and occurs fairly often in cases where an over-distended uterus occasions unusual pressure on the renal veins, such as twins, hydramnios, and hydatidiform mole. It is very frequent with primiparæ.

Patients who suffer from chronic Bright's disease, or whose other pregnancies have been complicated by albuminuria, have a predisposition to its recurrence. A midwife should test the urine of every woman who engages her for a first confinement. If albumen is present, she must ask for a specimen fortnightly or even oftener, and test regularly, so as to keep herself acquainted with her patient's condition.

The test for albumen\* is a peculiarly simple one. It is a well-known fact that albumen coagulates on boiling, a frequent and familiar demonstration being afforded by the boiling of an egg.

**Treatment of slight albuminuria.**—If there is only a trace present, the midwife may defer calling in a doctor until she sees whether simple treatment will effect a cure. She must warn the patient to dress herself warmly, with flannel next the skin, to keep the bowels freely

\* See Vol. II., p. 161.

open with mild aperients, to eat no meat, and to drink an abundance of fluids, water as well as milk. Elimination by means of the skin, bowels, and bladder having been thus encouraged, the lungs must be assisted to do their part by an abundance of fresh air.

**Symptoms of albuminuria.**—The symptoms of albuminuria, which, as we said before, is a disease in itself, are œdema of the face, legs, and genitals, persistent headache, vomiting, and dimness of vision.

If a midwife is called to a patient who is suffering from a combination of any two of these signs, she should send for a doctor, and meantime test the urine. As she probably will not have her testing apparatus with her, she can improvise a substitute by boiling some urine in an iron spoon over a gas or candle flame, and adding a drop of vinegar in place of the acetic acid.

**Hot pack.**—If albumen is present, she will do well to keep the patient in a hot pack till the doctor arrives. For this purpose the bed should be covered with a piece of mackintosh or oilcloth, on which a dry blanket is spread. The patient, lying on this, will be covered with a blanket which has been wrung out in boiling water, and on this dry blankets will be laid to keep in the heat. While in the hot pack it is essential that she should drink large quantities of hot fluid, preferably milk and water, and she may also be given a purgative. Castor oil (1 ounce) is usually the easiest obtainable. By prompt action the midwife may avert a very serious crisis.

**Symptoms of eclampsia.**—The symptoms of eclampsia are those of albuminuria plus a few others. As it is vital that a midwife should be thoroughly familiar with them, they are recapitulated here, in the order in which they may be expected.

1. Albumen in the urine.
2. Diminution of the amount of urine secreted.
3. Œdema of face, legs, and genitals.
4. Headache, with flashes of light before the eyes, or dimness of vision. Occasionally the patient becomes quite blind for a time.
5. Singing in the ears.
6. Giddiness and dyspnœa.
7. Mental condition either heavy and dull, or irritable.
8. Vomiting.
9. Pain in the epigastrium.
10. Marked suppression of urine. An ounce or two may be

secreted in twelve hours, and that possibly almost black in colour, from the admixture of altered blood. On boiling it will be found almost solid with albumen.

**Convulsions.**—Eclamptic convulsions will then probably supervene. There may be any number, from one to a hundred or more, but it is rare to have an isolated attack. They may occur before labour begins, or at any time during labour, or shortly afterwards. Each fit is divided into two stages, the tonic and the clonic.

*Tonic stage.*—This lasts only a few seconds; the patient becomes very pale, and has an odd appearance, usually fixing her eyes on one corner of the ceiling; her teeth are clenched, the body is rigid, the breathing suspended. It is immediately succeeded by the

*Clonic stage.*—In this, convulsive twitchings begin at the face, and spread over the entire body; the face is cyanosed, the veins starting, and foam streaked with blood appears at the mouth, the tongue usually being violently bitten. The patient is entirely unconscious during the fit, and remains in a condition of coma when it is past; in severe cases the coma continues, ever deepening, between the fits. Any movement or manipulation on the part of the attendant is liable to produce an attack; a vaginal examination or the passing of a catheter or rectal nozzle will almost certainly provoke one. The temperature may be raised to 103° F. or 104° F.; the pulse will be small and quick.

**Prognosis.**—The prognosis is bad, 20 per cent. of such cases (1 in 5) proving fatal to the mother. She may die in a fit, from any one of the following causes:—

The bursting of a blood vessel on the brain (cerebral hæmorrhage).

Asphyxia, due to spasm of the respiratory muscles.

Paralysis of the heart.

Congestion of the brain, the chief symptom of which is the ever-deepening coma.

If she survives the initial attack, she runs a special risk afterwards of septicæmia, and of pneumonia or bronchitis, from some of the saliva having been drawn into the respiratory passages.

The cerebral hæmorrhage may leave a permanently injured brain, and in some cases the patient's mind becomes totally deranged. In most there is some loss of memory, and she will probably have no remembrance of her confinement. Needless to say, it is both harmful and unnecessary to tell her of the risks she has run. Occasionally the

original symptom of impaired sight, and even blindness, persists for a considerable period. But as a rule, when recovery occurs the patient is both mentally and physically completely restored.

A favourable ending may be anticipated when the attacks are far apart, when the patient regains consciousness in the interval, when the amount of albumen is slight, and when the temperature tends to fall instead of mounting. It is also a good sign when the fits begin in the second stage.

Labour may be precipitate, with very violent uterine contractions, but more often the situation is complicated by an undilated os. Nearly half the children are stillborn, either from the tonic contraction of the uterus, or from the harmful results of the poison in the mother's blood.

**Treatment.**—The midwife's first duty is obviously to obtain a doctor with all possible speed. While waiting for him, she should get the patient quickly to bed between blankets, in a dark, quiet room, on no account exposing her to risk of chill from washing; she will indeed be best left in whatever clothes she has on, loosened at the neck and waist, until the arrival of the doctor. She must lie on her side, so that the saliva may run away, and not be drawn down into the lungs. During the fits, a wedge of some kind must be introduced between the teeth to save the tongue, as far as possible, from injury. The handle of a spoon, covered with some thick material, makes an efficient appliance. If the doctor may be expected soon, and the interval between the fits is considerable, the midwife will probably be wiser to content herself with such negative treatment, rather than by more active measures to provoke further convulsions, any one of which may kill the patient.

If, however, her condition is already so critical that relief of some kind seems imperative, the midwife may try to get rid of some of the poison by an enema to which Epsom salts have been added; she may pass a catheter, and if vertex or breech is presenting, she may diminish the intra-uterine pressure by rupturing the membranes. Some doctors might wish to give a hypodermic or morphia, and five grains of calomel by the mouth, if it can be swallowed.

The doctor may induce labour—may hasten it by manual dilatation of the os—or may instantly apply forceps if the conditions are favourable. The midwife must therefore seek to forestall his requirements, and have everything in readiness for immediate operation.



**After-treatment.**—This will of course be ordered by the doctor. Many authorities seek to dilute the blood as much as possible by saline injections, either into the cellular tissue of the breasts, or else into the rectum by means of a nutrient apparatus.

The midwife must see that her patient is provided with extra warmth, by means of flannel nightgowns, blankets instead of sheets next her, and hot bottles. She must be given milk and water only until the albumen has almost disappeared, and her bowels must be kept freely open. She must stay in bed until a return to solid diet has been safely accomplished without a return of albuminuria.

The urine must be measured and tested daily, and the full quantity kept for the doctor's visit, as it is probable that he will wish to test the quantity of urea. A progressive increase of the latter will keep pace with the diminution of albumen.

## CHAPTER LII

### RUPTURE OF THE UTERUS

Causation—Retraction—Complete and Incomplete Rupture—Symptoms of Threatened Rupture—Management of the Case—Indications that the Uterus has Ruptured.

**Causation.**—This probably fatal complication of labour may arise from a variety of causes. The abdomen may be crushed or ripped open, or the uterus may rupture during labour, either from cancer or fibroid tumour or at the site of an old Cæsarean section. It has very occasionally been known to rupture spontaneously before the beginning of labour from degeneration of tissue. All these occurrences are, however, extremely rare, and it is hardly too much to say that a ruptured uterus is a preventible evil, and one which should not be allowed to happen.

The usual cause is *obstructed labour* which has not been diagnosed or treated in time—obstructed either from contraction of the pelvis, abnormal size of the child, hydrocephalus, or a malpresentation.

**Ergot.**—Should anyone be so ill advised as to attempt to force the child through the pelvis by the administration of ergot, the danger will be tenfold increased. It would seem unnecessary to suggest that so rash a proceeding were still possible, if that great authority Dr. Herman, in his “Difficult Labour,” revised as lately as 1906, had not stated that “the most common immediate cause of a ruptured uterus is the administration of ergot in obstructed labour.”

**Retraction.**—From the beginning of labour, as we have already pointed out, the forces of contraction and retraction are working hand in hand. During each pain the body of the uterus contracts—*i.e.*, becomes harder, smaller, and its muscular wall thicker. As the pain passes away, it relaxes, but never to the same extent as before; each successive contraction makes the uterine wall a little thicker and the uterine cavity a little smaller, and to this process is given the name of retraction.

The whole of the uterus does not, however, act in this manner; the

lower segment, part of which originally formed the cervix, is at work stretching, enlarging, thinning out all the time, so that instead of forming a narrow neck to the uterine body it comes to be merely a continuation of the latter, as large, but with a very much thinner wall. This process is an essential part of labour, but it may become an element of danger if the second stage is unduly prolonged.

In obstructed labour the child cannot descend; the upper part of the uterus persists in growing smaller and thicker, and the lower part must necessarily adapt itself to the situation and stretch itself in order to meet the need, its wall growing meantime thinner and thinner. The rupture may occur anywhere in this thin fabric, the danger signal occurring where the upper division meets the lower, in the form of a furrow which can be felt abdominally. This line or retraction ring corresponds to the part where the peritoneum's firm attachment to the uterus ends; 'it is carried lower, but is then separated from it by loose cellular tissue. The retraction ring is also called the ring of Bandl.

If the patient is not delivered as soon as the retraction ring is formed, and if the uterus is of good material and does not immediately rupture, the furrow may be felt mounting higher and higher, indicating that the uterine body has not ceased to contract, nor the lower segment to stretch, and that therefore the danger is increasing at every moment.

**Complete and incomplete rupture.**—The rupture, if it occurs, may be either complete or incomplete. In *complete* rupture the rent is through the peritoneum, and the contents of the uterus will then pass straight into the abdominal cavity. In *incomplete* rupture, the blood, etc., is poured out into the cellular tissue, and the peritoneum is stripped away from its attachments to the uterus.

**Symptoms of threatened rupture.**—It must never be forgotten that as a rule a serious case begins much the same as a normal one. A careful midwife will have made full notes of the history of past labours, and the beginning of the present one, and will probably not be taken by surprise. A careless one is not so quick to mark the indications and premonitory symptoms of danger, and will probably remain assured to the end of her life that she could not have foreseen the calamity, and that she had done all that was in her power to save the woman's life.

The past history of the patient, her circumference and convexity, the failure of the midwife's efforts to push the head well down into the

brim—all these should have put her on her guard, and if the head remains above the brim after the membranes are ruptured, no time should be lost in summoning the doctor. There will probably be no immediate danger as long as the membranes are intact, and it is of the first importance to keep them so.

Confusion sometimes arises from the fact that when the pelvis is very contracted, and the head unable to descend in consequence, the os is not, as usual, drawn up into the body of the uterus, but hangs down in front of the head like a thick, soft curtain. Its extremely dilatable substance would offer no obstacle to the presenting part, but still it has not entirely disappeared, and therefore the inexperienced attendant may fail to diagnose that the second stage of labour has been reached.

Another trap for the unwary is when the head has successfully passed through the pelvic inlet, but is caught fast in the cavity, either from a generally contracted or a funnel-shaped pelvis. The examining finger detects undoubted advance—the scalp may even be just in sight, and the fact that the caput is increasing while the skull remains immovable is overlooked. To the unobservant midwife may now come a rude awakening. The strong pains which she has been complacently assisting under the impression that each one may bring the labour to a close, cease to be intermittent, and are merged into one long continuous pain, a condition known as *tonic contraction* of the uterus.

The whole condition of the patient will have been gradually altering for the worse. Her lips and tongue will probably have become black, and covered with sordes, the temperature raised, the pulse small and quick, the respirations hurried and shallow, the vagina hot and dry, with throbbing arteries. The abdomen will be excessively tender and rigid, so that the child's small parts can no longer be felt, and probably the retraction ring can be detected.

**Management of the case.**—The midwife, having already sent for the patient's doctor, must now insist that if he is not available the immediate assistance of some other doctor must be secured at all costs. The patient must be allowed to lie in any position which is least intolerable to her, must be discouraged from straining, and forbidden anything which could possibly increase the pain. Hot flannels to the abdomen occasionally mitigate it, and may be tried with that object.

If help is not forthcoming, the next occurrence will probably be the rupture.

**Indications that the uterus has ruptured.**—Pain and straining will suddenly cease, slight hæmorrhage will be observed, and a condition of complete collapse will set in. If the presenting part has been in sight, it will be seen to recede, and abdominally the uterus will feel hard and small, while a tense swelling may be detected at its side.

The patient will be almost certain to die, either immediately, from shock; within a few hours, from hæmorrhage; or within a few days, from peritonitis. Instant operation is indicated, but the doctor will greatly prefer to move the patient into the nearest hospital or infirmary if this is possible. It is highly probable, however, that it will not be, and the midwife must therefore have prepared sterilised water, jugs, basins, clean warm sheets and blankets, hot bottles, and a good light. She must also see that there are fresh eggs (for albumen water), brandy, and milk in the house. Panopepton or Valentine's meat-juice is very preferable to milk, if either can be obtained.



## CHAPTER LIII

### PULMONARY EMBOLISM—INVERSION OF UTERUS—PUERPERAL MANIA

Pulmonary Embolism and its Treatment—Air Embolism and its Treatment. Inversion of Uterus—Causation, Symptoms, and Treatment. Puerperal Insanity—Symptoms of Mania—Treatment.

#### I.—EMBOLISM

PULMONARY embolism is occasionally the cause of sudden death in a convalescent patient, who may have been making good progress up to the time of her attack. She may have had a fit of coughing, or sat up suddenly in bed; but sometimes no cause can be found. Women who have suffered from post-partum hæmorrhage, or whose venous and arterial systems have been disordered, as in phlegmesia alba dolens, are especially liable. A clot or thrombus has formed somewhere, possibly in the leg, when the patient is said to be suffering from thrombosis; possibly it may have formed in the uterine sinuses at the placental site—a very common occurrence after labour. For some reason the thrombus is detached, and becomes a travelling clot or embolus. It is carried by the circulation to the lungs, where it causes asphyxia to a greater or less degree, and one of three things will then happen.

The patient may fall down, fighting for breath, and die in a few seconds; she may die after a period of dyspnœa, restlessness, and collapse; or if the fragment is small she may suffer for a time from a great feeling of suffocation or pain in the chest, with fainting or restlessness, but the clot may finally pass on and be absorbed, and the patient recover. After this, however, she will be liable to inflammation in some part of the affected lung.

**Treatment.**—The treatment, if the patient lives long enough for any to be practicable, is the administration of cardiac stimulants, and hot applications to lung and heart. The patient must be kept as quiet as possible, and the doctor summoned.

**Air embolism.**—Occasionally the same disastrous consequences may follow the introduction of air bubbles into the circulation through the

uterine veins. A midwife may be the direct cause of her patient's death by allowing air to accompany a douche into the vagina, and thence into the uterus. The whole apparatus is, of course, normally full of air, all of which must have been displaced by the lotion before any attempt is made to give the douche—the lotion being run through the tubing till no more bubbles escape. The uterus must first have been well rubbed up till it is in a state of contraction, and the fundus must be firmly held by the left hand throughout the douche.

Air embolism is also occasionally a result of something left behind in the third stage of labour. The retained shreds will mechanically keep the veins open, and also generate gas bubbles during decomposition.

**Treatment of air embolism.**—This is much the same as in the former variety, but artificial respiration should also be resorted to.

## II.—INVERSION OF UTERUS

This is the rarest of all the complications of childbirth. In it the uterus turns absolutely inside out, so that what was the internal surface becomes external, and bulges into the vagina like a tumour; sometimes there is only partial inversion, when the fundus becomes first cup-shaped, and then sinks down into the lower segment, but not through it.

**Causation.**—The body of the uterus may be pushed down from above, or it may be pulled down from below. Inversion can only occur when there is marked uterine inertia, and at a moment when the uterus is in a state of relaxation. It may therefore betoken the improper conduct of the third stage of labour. It may be hoped that no trained midwife would ever perform the ignorant and dangerous action of hastening the delivery of the placenta by pulling on the cord, but she must be equally chary of expressing the placenta when the uterus is soft and relaxed.

Inversion occasionally takes place through no fault of the attendant, but as the consequence of marked uterine inertia, frequently following over-distension. It may also result from a fibroid tumour or an abnormally short cord which pulls on the placenta before it is detached at the birth of the child. The same effect may be produced by the coiling of the funis round the body or limbs of the child.

The *prognosis* is very bad, half the cases dying from either hæmorrhage or shock.

**Symptoms.**—These are the ordinary ones of collapse, with acute pain, and more or less bleeding. The fundus may be seen emerging at the vulva, or a round bleeding mass may be felt in the vagina. In cases of chronic prolapse of the uterus, a vigorous expression of the placenta will sometimes bring the cervix into sight, but in that case the patient will not be suffering from collapse, and the fundus can still be felt abdominally. In cases of complete inversion there is an entire absence of the usual firm body, felt on abdominal palpation. If the inversion is incomplete, a cuplike depression can be felt at the fundus, and there will probably be slight symptoms of collapse.

**Treatment.**—The midwife must, of course, at once summon the doctor, but she must by no means wait for his arrival in order to restore the uterus to its proper position. However ill the patient seems, the uterus must be bathed with a warm solution of lysol, and replaced as quickly as possible. If the placenta is still attached, the midwife must *not* try to remove it until the uterus is back in its right position. If the uterus is left outside, the woman may die of shock within half an hour, and moreover, every moment that passes increases the difficulty of reposition. The way to replace the uterus is either to receive it in the palm of the hand, or else to place the closed fist against it, and push firmly in the right direction, the other hand making counter pressure over the abdomen at the same time; this second hand presses the tips of its fingers down into the cervix in the shape of a cone so as to dilate it.

Should the attempt fail, it is best to wrap a towel round, wrung out in hot lysol, and await the arrival of the doctor, keeping the patient alive meantime with hot bottles and stimulants.

### III.—PUERPERAL INSANITY

Mental derangement is not infrequently exhibited for the first time in women either during pregnancy or the lying-in period, or at any time during lactation. It is usually of a temporary character, but is apt to recur with each successive pregnancy, becoming more permanent with every recurrence. Patients with a family history of insanity have a predisposition to the puerperal type, and other causes which make it likely to recur are violent shock, mental emotion, post-partum hæmorrhage, sepsis, and eclampsia.

There are two ways in which the insanity may be manifested, *melancholia*, in which the patient suffers greatly from depression, often feeling

herself irreclaimably wicked, and *mania*, in which she becomes violent, and entirely unlike herself. The former is the more common during pregnancy, and the latter after labour, but they both may occur at either time.

**Symptoms of mania.**—The first symptoms are usually sleeplessness and aversion to food; when these are noticed they should always be reported to the doctor. The next symptom will probably be a great dislike of either husband or child, and as the accompanying delusions not infrequently lead the patient to attempt to kill her baby, it should be taken away from her at the first indication.

**Treatment.**—The treatment will, of course, be ordered by the doctor; he may very probably recommend an asylum until convalescence has set in, but if the midwife finds herself still responsible for the nursing of the patient, she must endeavour to carry out the following rules: The room must be kept cool, dark, and quiet, the patient absolutely at rest, and not allowed to see her friends or excite herself. She must be made to take her food (forced feeding is sometimes necessary), the bowels must be kept freely open, and she must never be left alone in the room, for fear she should try to take her own life. During convalescence she must be encouraged to think she will completely recover, but warned against bearing any more children.

Mental derangement occasioned by lactation is usually not very serious, in that the women generally recover their reason in from three to six months; it could in many cases be prevented by weaning the child.

There is also the temporary delirium of labour, which occurs at the most painful period, and generally terminates either with the delivery of the child or shortly after.



## CHAPTER LIV

### COMPLICATIONS OF PREGNANCY

Vomiting—Chorea—Malposition of the Uterus—Anteflexion and Anteversion—  
Retroflexion and Retroversion—Varicose Veins—Hæmatoma of the Vulva—  
Hydramnios—Pneumonia—Heart Affections.

SOME of the minor complications of pregnancy have been dealt with in a former chapter, as well as the serious conditions of albuminuria, eclampsia, ante-partum hæmorrhage, and insanity. There still remain, however, some disorders about which the midwife should be informed.

**Vomiting.**—The ordinary morning sickness of pregnancy is merely a temporary inconvenience occurring in the earlier months, though in rare cases it may be so excessive as to endanger the patient's life, and make it advisable for labour to be induced. A more pernicious variety sometimes occurs in the later half, and may be due to kidney trouble, to a nervous disorder, or threatened eclampsia. Should it occur, the doctor must be called in; and he will pronounce from which variety the patient is suffering. If from nervous disorder, it is best to ice all food, and apply ice compresses to the root of the neck just above the clavicles, besides keeping the patient entirely in bed, and reassuring her as to the temporary character of the trouble.

**Chorea, or St. Vitus's dance.**—This not infrequently appears for the first time in pregnancy, and is especially common with primigravidæ. If there has been a tendency to it from childhood, it will be greatly aggravated by pregnancy. The patient should always be under the care of a doctor, but the midwife should instruct the friends on several points. If, for instance, the movements are so violent that the young woman is apt to roll off the bed, her mattress should be placed on the floor. She should be kept at a distance from the fire, and not allowed to use a knife. In taking her temperature, the thermometer should never be placed in the mouth, but in the axilla, and held there all the time. In severe cases it is often necessary both to feed and wash the patients even before they are confined, as they are unable to order their



movements to any purpose, and their intellects are often temporarily obscured. The symptoms will probably abate considerably after delivery.

Chorea is an affection of the nervous system; others belonging to the same group are neuralgia (this may be experienced in other nerves as well as those of the head, and especially the uterine nerves), toothache and insomnia. The midwife should not attempt to treat any of these with drugs. If the condition is too serious to be soothed by gentle applications of warmth and hot milk, with sympathy, a doctor's advice had better be sought.

**Malposition of the uterus.**—Many women suffer from prolapse of the uterus (falling of the womb), especially those who have had large families, and with whom the pelvic floor has been injured during past labours. As a rule, however, a prolapsed uterus gives less trouble when pregnant than at any other time; its own enlargement and the growth of the foetus prevent its being accommodated in the lower part of the pelvis, and as the body of the uterus gradually frees itself from the bony basin, and rises higher, it draws the prolapsed cervix up with it. This disorder usually therefore rights itself after the seventh month of pregnancy, and the patient should be encouraged to hope that such will be the case. Occasionally, however, the cervix is prolapsed, not because it is lying unusually low in the pelvis, but because it has grown much longer than the normal cervix. This is a diseased condition known as *hypertrophic elongation of the cervix*. It is a serious one, because the os, instead of being high up, and shielded from the germs of the outer world by its sheath and canal, the vagina, is now in direct contact with them, and moreover, instead of presenting its usual unbroken surface, has probably become rubbed and eroded by friction. The doctor, who must, of course, be consulted, will probably recommend that the patient be kept in bed, if near her labour (the prolapse is much less marked in the recumbent position). In early pregnancy he may advise the use of a pessary. The genitals must be kept scrupulously clean, and an aseptic pad worn. If there is already discharge from an ulcerated state of the cervix, the patient will be in a septic condition, and the midwife must take every precaution to avoid passing on the germs to some lying-in woman.

**Anteflexion and anteversion.**—The fundus sometimes shows a disposition to bend or tilt forwards, especially if the abdominal walls are very lax. In a primipara, an anteverted uterus (or pendulous abdomen)

is a sign of contracted pelvis, and should be reported to a doctor, whereas in a multipara it is common as a result of many pregnancies in quick succession. In the latter case the abdomen should be supported by a binder, and the patient must be encouraged to lie on her back as much as possible when resting, and also during labour. The condition does not, as a rule, give rise to any real difficulty, but it may lead to a transverse presentation. The application of the tight binder will be of assistance during labour as well as during the later months of pregnancy, as it gives suprapubic support.

**Retroflexion and retroversion.**—These malpositions can occur only in the early months, before the uterus has risen out of the pelvis. They both indicate a serious condition. Attention will probably be drawn to it by the inability of the patient to empty her bladder (a constant symptom being incontinence of urine), and an obstinate constipation combined with great discomfort. If not promptly relieved, it may lead to abortion, or to cystitis from decomposition of the retained urine, as well as grave indisposition from constipation. Occasionally the child becomes incarcerated and dies *in utero*.

The replacement of a retroverted uterus is a serious matter, requiring the manipulation of the doctor, and he will often be glad to have the assistance of a midwife. His first step will be to pass a catheter and empty the bladder, and if his coming is delayed, the nurse may attempt to do so herself. She will probably not succeed, as it is much more difficult than usual, the parts being so displaced that the bladder cannot be reached until the point of the catheter is above the symphysis. Only a soft rubber catheter should be used, and strict antiseptic precautions observed. If the attempt succeeds, the patient should immediately be placed in the knee-chest position, when the uterus may right itself.

It may be necessary afterwards to pass the catheter repeatedly, and if so, it is very advisable to wash out the bladder daily in order to prevent cystitis. The washing out of the bladder is a necessity in any case where cystitis has occurred. The midwife's hands and patient's genitals must be disinfected in the same manner as for a vaginal examination. The process has been described in an earlier volume,\* but it may here be added that when the patient experiences slight discomfort from the amount injected, the funnel is depressed, and the lotion allowed to return and then poured away. Care must be taken

\* See Vol. II., p. 204.

throughout to avoid the passage of air. The tubing must be tightly nipped while the catheter is withdrawn.

**Varicose veins.**—These are very common in pregnancy, occurring especially on the legs and vulva, as the result of pressure. Whenever they are present, the patient should rest with her feet up as much as possible, and if they are really bad, she should stay entirely in bed. Constipation must be avoided. Indiarubber bandages form a good support, but must not be applied too tightly; an elastic stocking is sometimes worn.

*Treatment for ruptured varicose vein.*—If a vein should burst, the patient may lose her life from hæmorrhage unless prompt measures are taken. She must instantly lie down on her back, holding the leg straight up in the air, when the bleeding will cease. The limb must be tightly tied above and below the wound, which should be covered with an aseptic pad.

*Varicose veins of the vulva* occasionally rupture during labour, or they may actually obstruct the outlet and render forceps necessary. It is therefore important that the patient should see a doctor beforehand; he will probably order rest in bed, and the application of cold compresses and hazeline lotion or ointment.

**Hæmatoma of the vulva.**—When a vein ruptures below the surface, the bleeding takes place into the tissues, and does not escape. This produces a large dark red swelling, which may cause inflammation in the surrounding tissues. A doctor must be summoned, and the patient kept in bed. If the swelling has only just appeared, firm pressure may limit the amount of the hæmorrhage.

**Hydramnios.**—Occasionally the liquor amnii greatly exceeds the normal in quantity; instead of something under two pints there may be from five to ten or even more.

The symptoms will resemble those of a twin pregnancy, inasmuch as the abdomen will be larger than usual, and the patient will suffer from œdema of the legs and vulva, albuminuria, and shortness of breath from increased pressure. There will be a tendency both to malpresentations and premature labour. In marked cases there are usually considerable vomiting and abdominal pain from the rapid increase of the liquor. The diagnosis will be made from the unnatural mobility of the fœtus, combined with the enlarged circumference. The labour will be marked by uterine inertia, as a result of the over-distension of the uterus.

The dangers to be feared are : for the child, prolapsed funis ; for the mother, post-partum hæmorrhage. Every precaution must be taken against the latter, and if the case is a very pronounced one, the midwife will do well to summon the doctor when she first diagnoses hydramnios.

**Pneumonia** is more than usually serious when it is present in a pregnant woman, and generally leads to abortion. The slightest attack should therefore be regarded as of the utmost gravity ; it is best for the patient if the illness subsides before labour begins.

**Heart affections.**—Women suffering from a diseased heart will be liable to severe fainting attacks during pregnancy ; they may die suddenly of heart failure during labour, and a doctor must always be engaged beforehand to attend them.

## CHAPTER LV

### DRUGS AND APPLIANCES

Chloral Hydrate—Sulphate of Quinine—Ergot—Castor Oil—Magnesium Sulphate  
—Drugs for Infants—Nail-brushes—Higginson Syringe—Douching Appliances—Catheters.

#### I.—DRUGS

THE Central Midwives Board does not prescribe or forbid the use of any particular drugs to those holding its certificate. The rule laid down with regard to them is that a midwife must note in her Register of Cases each occasion on which she is under the necessity of administering any drug other than a simple aperient, the dose, and the time and cause of its administration.

There are three principal drugs given in the course of labour, viz. chloral hydrate, sulphate of quinine, and ergot, and, roughly speaking, they may be regarded as each belonging to a different stage of labour, although this is not a hard-and-fast rule.

**1. Chloral hydrate** (first-stage drug).—Chloral hydrate soothes the nerves of the patient, renders pain more bearable, and may induce sleep. The principal use of this medicine in midwifery is to render the os dilatable; it has a very softening effect upon it, especially if taken during the preliminary stage of labour—before the cervix has disappeared. It has a slightly depressant action on the heart, and should not, therefore, be given if the patient has suffered from acute rheumatism, or if the pulse is weak and irregular, without consulting a doctor. If given too freely, it is thought to increase somewhat the liability to hæmorrhage, and it is better therefore to restrict its use to the earlier half of labour. It is very valuable in reducing a tendency to eclamptic seizures, and for this reason, as well as because the os is more rigid in first labours, it is advisable to give one or two doses to primiparæ. When convulsions have actually taken place, it is permissible for a midwife to give a dose while waiting for the doctor. It is usually given in the form of syrup (syrup of chloral,



British Pharmacopœia, 1 drachm equals 10 grains of hydrate of chloral), or in tabloids which can be dissolved in hot water.

*Dose*.—15 to 20 grains, to be repeated if necessary after an interval of 4 hours.

2. **Sulphate of quinine** (for primary uterine inertia, second-stage drug).—Quinine is a general tonic, acts as an antipyretic, and stimulates the uterus to contract, though not so powerfully as ergot. It is practically insoluble in water. Quinine should not be given in secondary inertia, for, as explained before, the uterus does not then require stimulation, but a period of rest in which to create new force. As its action is short-lived, it should not as a rule be given during the first stage of labour, but be kept to promote the final expulsive efforts; this rule does not apply to cases of ante-partum hæmorrhage, in which it may be tried whenever necessary. The bitter taste is liable to cause nausea. It is usually given either in the form of a powder, when it should be floated on the top of a tablespoonful of milk and taken down quickly, more milk being drunk immediately afterwards. A more convenient, but more expensive form is that of tabloids or pellets, which are swallowed whole.

*Dose*, 5 to 10 grains. It is generally advisable to give 5 grains at first, and follow with a second 5 grains if necessary in 20 minutes' time.

For ante-partum hæmorrhage give 10 grains, followed in a quarter of an hour's time by 5 more, or 10, if necessary.

A tablespoonful of brown sugar is a possible substitute for quinine in uterine inertia.

3. **Ergot** (after-labour drug).—Ergot has a special action on the uterus, stimulating it to contract; it also causes contraction of the small blood-vessels, and diminishes all the secretions. It is used frequently to be given in the second stage of labour, and acted so effectually that when there was any difficulty in the passage of the child the result was a ruptured uterus. It has, indeed, been used inappropriately on so many occasions that it is well to sum up the dangers.

*Dangers*.—(1) If given in the first stage, it will lead to rigid and lacerated os.

(2) If given in the second stage, it may cause tonic contraction with rupture of uterus, and the death of the fœtus.

(3) If given in the third stage of labour, it may result in hour-glass contraction with retained products.

The *rule for administration* is therefore :—

Never give ergot until the placenta and membranes have been not only expelled, but examined and found complete.

The only exception to this rule is that it may be given in cases of abortion if hæmorrhage is present, and indeed in any case of premature delivery up to the seventh month, if vertex or breech is presenting, and if the patient's life is threatened by the amount of ante-partum hæmorrhage that is occurring.

After the satisfactory examination of placenta and membranes has taken place, the midwife should give ergot if the tonicity of the uterus is poor, if the pulse is quicker than normal, or if she has any reason to fear hæmorrhage. In cases where the loss has already been excessive, and the patient is consequently verging on a collapsed condition, it must not be given by the mouth as it may provoke a tendency to vomit, which will turn the scale on the wrong side. In these circumstances a hypodermic injection of ergotin (Burroughs and Wellcome's tabloids, rubbed down in 10 minims of water), or of ernutin (a special fluid preparation), should be given into the buttocks, not under the skin, but deep into the muscle.

The liquid extract of ergot, which is the preparation usually chosen, may be used during the puerperium (*a*) to relieve after-pains caused by clot, when it should be given in large doses, 1 drachm in half an ounce of water; (*b*) to promote involution of the uterus, when 20 minims is usually ordered 3 times a day. It has unfortunately a slight influence in reducing the amount of milk secreted.

In cases of threatened heart-failure or collapse, when the pulse is irregular, and so small as to be almost imperceptible, it is sometimes necessary to give a strong stimulant. Liquor strychninæ hydrochloridi, 5 minims, given hypodermically, is perhaps the best. Spiritus ammoniæ aromaticus (sal volatile),  $\frac{1}{2}$  to 1 drachm, may be given, or else brandy, 1 drachm in  $\frac{1}{2}$  an ounce of hot water. Brandy is very useful in cases of collapse after post-partum hæmorrhage, from  $\frac{1}{2}$  to 1 ounce in a pint of saline solution.

Two minims of brandy is given to infants who turn suddenly blue and cold, and who have a tendency to convulsions.

The other medicines used in midwifery belong mostly to the aperient class. The following may be mentioned :—

**Compound liquorice powder** (Pulvis glycyrrhiæ compositus).—This may be taken during pregnancy or the puerperium. Two drachms is

an ordinary dose, thoroughly stirred and mixed with cold water, about 4 ounces.

**Castor oil** (*Ol ricini*).—This is useful when an action is required speedily, as it frequently takes effect in 2 or 3 hours. But it should be given sparingly, for though it does not irritate the bowel, its after effects are very constipating. It may be given in milk, coffee, lemon, or diluted tincture of ginger, the medium being first placed in the glass and washed well round it, so that the oil does not come into contact with the sides. A little of the medium should be added on the top of the oil.

*Dose*, 4 to 6 drachms (1 to 1½ tablespoonfuls).

**Magnesium sulphate** (*Epsom salts*).—This drug has a great influence in checking the secretion of the milk, by causing copious watery evacuations, and should be used freely in cases where the baby is dead, or if it is necessary to wean suddenly. It is also largely ordered for the œdema of white leg and of eclampsia. It is most effective given in large quantities of hot water, although the amount must be limited if the milk secretion is to be checked, and its nauseous taste may be masked by the addition of 20 minims of tincture of ginger or peppermint. Half an ounce may be given at a time, or 1 drachm, to be repeated every hour until a satisfactory result has been obtained. An ounce of Epsom salts in 2 pints of warm water makes a very effective aperient enema. It must not be given as an aperient to a nursing mother.

**Cascara sagrada** tabloids are very useful during pregnancy. *Dose*, 2 to 6 grains.

**Confection of sulphur and sennâ**.—This is the best aperient to use when the patient suffers from severe hæmorrhoids, as it promotes regular actions, but is not drastic. It is in the form of a jam, and a teaspoonful may be taken every night.

**Garfield tea** and decoction of **senna pods** are both useful in the same way. A breakfastcupful should be taken regularly at bed time.

#### DRUGS FOR INFANTS

No strong drugs should ever be given to infants without a doctor's sanction, but there are various mild medicaments which the midwife should know about.

**Olive oil**.—A teaspoonful may be given to small and premature children every morning, as it promotes the action of the bowels, and helps to nourish. It must be stopped if there is a tendency to diarrhœa.

**Cod-liver oil** may be given in the same way, if the child is in need of increased fat in its diet. Watch should be kept on the actions, lest they should become super-fatted, when they will have a greasy and white or green appearance, with small fat globules. Grass-green actions resembling spinach floating in fluid indicate enteritis, which demands immediate treatment by a doctor. An ordinary green stool, however, merely shows that the stomach is too acid, and that it requires an alkali to counteract it. Bicarbonate of soda may be given, as much as would lie on a threepenny bit, or lime water, 1 drachm, before each meal if breast fed, or added to each bottle.

**Manna** is a valuable remedy for the constipation of bottle-fed infants, but expensive. A lump as large as a small nut, should be added to each bottle.

**Castor oil** may be given if the actions are becoming too frequent and fluid, or if the infant has been fed on unsuitable diet. It has occasionally to be resorted to when a child has been thoroughly neglected and constipation has lasted for days, but as it always entails more constipation it must be followed by other aperients, and only used if absolutely necessary.

**Magnesium sulphate** is also a useful aperient.

It must be remembered that it is a very bad plan to physic young children; the addition of extra fat to the diet often regulates the action, especially if a small piece of yellow soap in the shape of a pencil, is introduced into the rectum every morning. The great way to avoid constipation is to regulate the infant's food, and if breast fed, the mother's diet.

**Glycerine** and **borax**, or **glycerine of boric acid**, are the best preparations for spreading on the tongue and mouth if through negligence thrush has been allowed to appear.

## II.—APPLIANCES

There are certain rules which a midwife should lay down for herself with regard to the care of her bag and appliances, and which she should never transgress.

One is that no syringe, nail-brush, bowl, scissors, nothing in short that has been used during the labour be returned to the bag without being first boiled or (in the case of scissors, if preferred) disinfected in liquefied phenol. All such appliances should be carried home in a piece of paper, and *not* put back into the bag.



**Nail-brushes.**—It is best to use the ordinary “penny scrubbers,” as one can be devoted to each case and thrown away afterwards. The brushes should be boiled beforehand, and kept in a clean covered jar, in 1 in 40 carbolic. A mackintosh bag should be set apart for them in the case bag, and after labour the brush should be left in a clean bowl or saucer, out of reach of the children, and used for the midwife’s hands on each visit.

The bowl or bowls taken in the bag, and used at each case, must be washed on the return home with soft soap and hot water, and then boiled for five minutes. It is well to take a bowl round on morning visits also, and this must be boiled daily. It is distinctly undesirable to use the same bag both for cases and for morning visits, and not more economical in the end.

The bags used for wool, brushes, and all appliances should be made of jaconet or indiarubber, and kept tightly tied up. All bags and linings must be themselves scrubbed and boiled periodically, and well dried before being returned to the bag.

**Higginson syringe.**—This should be disinfected, by being, after thorough soaping and rinsing, soaked in perchloride of mercury 1 in 1,000 for 3 or 4 hours. The nozzle should be boiled every time it is used. If there is any special reason for doing so, the syringe itself can be carefully boiled for five minutes, but to boil it repeatedly will injure the rubber. Higginson syringes are used chiefly for enemata, but are also employed for irrigating wounds of the vulva, and, if absolutely necessary, for douching. The same syringe must *never in any circumstances* be used for these purposes after it has given an enema.

**Douching appliances.**—There are several of these in use. Quite the worst is the one just mentioned, the *Higginson syringe*, which, as we have said, should never be employed except from necessity, as it is liable to pump in air, and never supplies the steady stream that is called for. A proper douche can, such as is used in hospitals, is very much the best appliance, but is very bulky to carry round in district work.

A *Rotunda douche* is a lengthy and cumbrous affair, whose chief advantage lies in its portability. In wielding it, the principal points to remember are that the sucker end must be firmly affixed to the bottom or side of the jug, with a disinfected hand, before the lotion is added; and that the bulb is not squeezed perpetually, like the bulb of a Higginson syringe, in order to give the douche, but two or three times only to expel



the air, while the tubing is tightly pinched at the same time near the glass nozzle. If the jug is then raised and the nozzle lowered, the lotion will be found to run.

The Rotunda douche will stand a certain amount of boiling, but only for very limited periods.

*Vaginal nozzles* must always be of glass. After use they should be rinsed under a tap, the water running through the small holes to the larger opening, until they are quite clean and free from shreds. They must then be placed, business end down, each in a little calico bag made to fit, and one inch longer than the nozzle, the mouth of the bag tied tightly round, and the whole boiled for ten minutes ; the bags then being squeezed with a disinfected hand, and placed in an indiarubber bag, which is again tightly tied up, or in a sterilised glass pot with a screw cap top. If it should be impossible to re-boil the nozzle in a patient's house before using it, this method will be found to introduce as few germs as possible. The same should be done to all catheters.

**Catheters** may be either of soft rubber, glass or metal. Soft rubber ones are the best and least painful, and no other kind should be used during labour. Glass must never be used before delivery, as a strong contraction might so drive the head on to the catheter as to break the instrument in the urethra.

To clean a catheter, it is imperative first to flush it from the eye towards the large opening. The reverse method will often drive tiny shreds of lochia, etc., up into the farther end, whence they cannot be dislodged, and they thus become a source of danger.

## CHAPTER LVI

### ABNORMALITIES IN THE INFANT

Asphyxia, Blue and White—Methods of Artificial Respiration—Facial Paralysis and Fractures—Malformations.

THE care of the infant is not the least of the midwife's duties ; but as it is dealt with in the section on Monthly Nursing we do not enter upon it here except as regards those abnormalities which may confront the midwife in her first attendance on the child.

**Asphyxia.**—The infant may be born in a state of asphyxia ; this is especially likely in cases where the membranes have ruptured early, and the labour has been a long one, as well as in prolapse of the funis, contracted pelvis, and breech presentations.

There are two stages, *asphyxia livida* and *asphyxia pallida*—blue asphyxia and white asphyxia—the second being far the more serious of the two.

In *blue asphyxia* the circulation has been temporarily interfered with by compression of the cord ; the child is deeply cyanosed, but the cord has not ceased to pulsate, and the condition will probably yield promptly to treatment. The mouth and throat must be thoroughly but gently cleared of mucus with pieces of dry rag or soft feathers, and the child raised from the bed by the feet, so that it hangs head downwards. A smart slap across the buttock or vigorous rubbing of back and chest will often make it cry and so open the lungs. A warm bath is also beneficial, especially if cold water is sprinkled on the chest meantime. If these measures fail the child must be separated from the mother, and artificial respiration performed.

In *white asphyxia* the continued interference with the circulation has resulted in paralysis of the nerve centres ; the cord will probably have ceased to pulsate, the body will be white and flabby, and the child's life is in serious danger. If possible, the midwife should have a hot bath ready, and the child should be placed in this, while the air passages are

cleared and the cord ligatured ; then while an assistant continues to hold the child in the bath, the midwife must proceed to do artificial respiration, keeping up the temperature of the bath meantime. If she is single-handed, or if the basin is not large enough to admit of this, the artificial respiration must alternate with hot baths and rapid drying. The condition of the child in this variety of asphyxia resembles that of a fire which is nearly extinct. Careful and tender methods must be used to revive it, and the natural efforts of respiration must be encouraged. Active stimulation must not be resorted to, as it may extinguish the feeble spark of life, therefore neither slapping nor aspersion with cold water is permissible. Artificial respiration must be continued as long as the child's heart continues to beat (the midwife must feel up *under* the ribs for the heart), and stopped as soon as the child commences to breathe, however feebly. The child must be put in a warm place, and watched to make sure that the breathing continues. The *after-treatment* consists of special care and warmth for the next forty-eight hours, with 3 drops of brandy in a teaspoonful of hot water every four hours, until three doses have been taken.

*Sylvester's method of artificial respiration.*—The child is laid on its back, with its head to one side so that mucus can run away, and a pad placed under the shoulders to throw the chest forward. An assistant grasps it by the ankles, while the midwife, standing behind its head, grasps the arms above the elbows, and pulls them gently outwards and upwards till they meet above the head. The arms are then brought down, and pressure made with them on the ribs, so as to force the air out of the lungs. Beginners usually make these movements too rapidly ; they should be only sixteen or twenty to the minute.

*Schultze's method.*—If improperly conducted this is a dangerous method and may injure the spine. The midwife therefore should resort to it only where all else has failed. She grasps the back and chest of the child with each hand, the thumbs lying on its chest, and the first fingers in the axillæ, the other fingers and palm of the hand against the child's back, its head being supported between her hands. She stands with her feet apart, and holds the child in front of her so that it too seems to stand on the floor. She then swings it above her head and over her shoulder, so that the child's legs fall over towards its face, and compress its abdomen and chest. This movement should be repeated only eight to ten times a minute, and the child must be immersed in warm

water for a few seconds after twenty such movements before repetition.

The child must be carefully dried so that it does not slip out of the hands.

**Facial paralysis and fractures.**—Injuries may occur during delivery, causing paralysis of the new-born child. If of the facial variety, it is not a very serious matter, as it is almost sure to pass away in a month or two. The mother must be reassured, and the child, if necessary, fed with a spoon for a time. But paralysis of any kind must always be reported to a doctor, especially if one of the arms is affected.

Fractures also must be under medical care, and slight abrasions of the skin must be treated antiseptically from the first.

**Malformations.**—There are various forms of arrested development which a midwife is likely to meet with in the new-born. Cleft palate and hare-lip, spina bifida, and turned-in feet all come under this heading. The feet will probably grow straighter in time, especially if the inner surface of the leg and ankle is gently rubbed every day and the foot gently drawn into line.

The other malformations must be immediately reported to a doctor, who will decide how soon an operation should be performed.

Infants with a cleft palate cannot suck, but must be fed with a spoon or medicine dropper, in a fairly upright position, the back being well supported.

The fluctuating tumour of spina bifida (caused by the membranes of the spinal cord bulging through an opening in the vertebræ) is apt to exude serum, and to become very septic. It must be surrounded by boracic lint so arranged as to avoid pressure, and the child must be kept out of the mother's bed as much as possible.

Other deformities for which the nurse must look at birth are imperforate anus, and phimosis, or narrowing of the preputial orifice in male children. There may be no opening at all, and in both these cases the doctor must instantly be consulted. The child may have extra fingers or toes or webbed fingers, but as these will not affect its health there is no urgency in seeking advice in such cases.

## BOOK V.—MONTHLY NURSING

BY FLORENCE STACPOOLE

### CHAPTER LVII

#### PREGNANCY, AND PREPARATION FOR THE CONFINEMENT

Hygiene of Pregnancy—What the Expectant Mother Needs—Diet—Pure Air—Exercise—Clothing—Preparation of the Nipples for Nursing—The Lying-in Room—What to have ready for a Confinement—Preparation of the Bed—Dress during Labour—What to have ready for the Baby—How to Bind—Important “Don’ts.”

**Hygiene of pregnancy.**—This subject has already been briefly touched upon in one of the Midwifery chapters (p. 141), but in this section for the monthly nurse some of the points must be emphasised and amplified. She will often be consulted on matters connected with it by patients whom she is to nurse, and she may be of immense service to them by giving good advice at this time. A great deal of subsequent ill-health may be caused by neglect before confinement. Such neglect may also be visited on the child.

Want of care before confinement often deprives the mother of the power to suckle her infant.

The mortality of babies during the first year of life is, as everyone knows, disgracefully high. *It will never be permanently and appreciably lowered until all mothers nurse their babies at the breast.*

This, of course, they cannot do if they have no milk. They are often without milk simply because they have not led healthy lives during pregnancy, or have been wrongly fed, or have not had food enough, or have continually breathed impure air. From pre-natal neglect of hygiene on the part of the mother the child’s natural food is bound to suffer. Before birth its food is solely derived from her blood. After birth its food, for six or eight months at least, ought to be her milk only. No artificial food can adequately replace it. Therefore no



trouble is too great for her to take to ensure that she will be able to nurse her child herself, and give it nourishing milk. If she is badly fed herself, she cannot possibly give it this.

**What the expectant mother needs.**—Nourishing food, pure air—by night as well as by day—exercise in open air, so long as it does not fatigue, plenty of sleep, early hours for going to bed, as few evening entertainments and excitements and as little worry and anxiety as possible. For working women, as much rest of body as possible. Light and loose clothing.

**Diet.**—Advise the use of eggs, milk, oatmeal or wheatmeal porridge, meat, fish, game, poultry, lentils, semolina, macaroni. All these contribute to *muscular* growth. Fruit and vegetables are purifying to the blood, and very useful unless there is tendency to diarrhœa.

Fattening foods, *i.e.* potatoes, rice, cornflour, sweets, and malt liquors, should be used sparingly. Beers and stout, indeed, are best entirely avoided; they increase bulk, but not strength. It is very bad for a woman to “fatten up” before confinement. It is said that a woman who is expecting a baby should be as careful to avoid getting fat as an athlete who is going to run a race. This means, not that she should eat little, but that she should eat what will make *firm muscular flesh*, not simply *fat*, it being, of course, very important that she should be in “good condition” at the time of confinement.

**Pure air.**—During pregnancy the blood is generally poor. There is urgent need for the fresh air that purifies the blood. The pregnant woman who sleeps in a stuffy, shut-up room and seldom goes out of doors half starves her coming child.

**Exercise.**—Unless forbidden by the doctor this is very necessary. Want of sufficient exercise during pregnancy causes the muscular tissue of the uterus to become flabby, and in this condition it does not contract so readily after the child is born, and there is greater risk of post-partum hæmorrhage. Patients should however be warned against long walks or *over-exertion* of any kind, and against efforts which may strain them internally, such as stretching to reach things off a high shelf, or throwing clothes over a high line to dry. This latter is a thing that may cause serious internal mischief.

It is found that when the mother has to do hard manual work up to the time of her child's birth the effect upon the child is injurious.

**Clothing.**—Heavy skirts may cause displacement of the uterus.

Tight bodices or high corsets worn during the later months of pregnancy may press upon the nipple and prevent its proper formation, and this may cause trouble when suckling begins. From America there comes the excellent suggestion that a wire tea strainer be worn over each nipple for some weeks before confinement, so as to prevent pressure.

**Preparation of the nipples for nursing.**—This must never be put off till after the child is born. Preparation should begin three or four months before the confinement is expected. If it is neglected cracked nipples may result. These cause much suffering, and may even lead to breast abscess. With ordinary care such an abscess should never occur.

Do not teach patients that the nipples should be hardened by bathing in spirits or astringents. Hard skin cracks easily. The nipples should be soft and pliable. The following is the best treatment, which women can easily carry out before confinement: Morning and night the nipples should be well washed with hot water, and dried. Then, if they are small or retracted, the patient should draw them out with her finger and thumb, gently but firmly, and then anoint them with cocoa-butter, or with an ointment composed of 1 part subnitrate of bismuth, 1 part borax, and 8 parts simple ointment, the whole thoroughly mixed. The nipples should then be covered with a clean handkerchief.

Impress upon the patient the necessity for the bowels to act regularly every day during pregnancy.

**The lying-in room.**—Remember that sunshine and fresh air are valuable disinfectants. In all confinements there is risk of *septic infection*. The danger of this is lessened if the accouchement takes place in a large, well-ventilated, sunny room.

If the patient's bedroom is small and dark, advise her to use another room—even her cherished drawing-room—for her lying-in. The room should have an open chimney. Its temperature should be from 60° F. to 65° F., and should be kept equal day and night, as a room very hot at one time and very cold at another is dangerous for both mother and child.

Remember that an escape of sewer gas or drain air in or near the room where a woman is confined may cause puerperal fever. It is most important for the monthly nurse to inquire into these things and to see that the water-closet is well flushed with water every day, that the pans hold water and that there is no leakage from them. She should also see that no waste-pipes from sinks or baths near the room are connected with a sewer pipe.

**What to have ready for a confinement.**—The following suggestions will be found useful:—

1. *Waterproof material* to protect the bed. Mackintosh sheeting costs from 1s. 8d. a yard for sheeting one yard wide, rubber on one side, up to 7s. 4d. a yard for the best sheeting of two yards in width.

One piece about a yard and a half square will be needed for the middle of the bed, and a strip about a yard wide and a yard and a half or two yards long for placing under the draw sheet.

American cloth, from 1s. 2d. per yard and 50 inches wide, can be used instead of the rubber, but is not so satisfactory. If used the glazed side should be downward, or the chill of it will be felt through the sheets.

In the maternity hospitals in Paris squares of brown paper covered with pitch are used instead of mackintosh. They are burnt after use. This idea should be useful to those who nurse among the poor. Such paper can be bought from most shops where nursing appliances are sold. It is called "Antiseptic Tarred Paper"; cost, 2s. per dozen sheets. Two sheets should be placed face to face, so that the tarred surfaces adhere and do not touch the bed covering.

Sanitary wood-wool sheets are very convenient to place under the patient during delivery, and being antiseptic obviate risk of infection from laundry-washed sheets, but they are not absolutely necessary. They are burnt after use. Cost, 1s. to 2s. 6d. each.

*Note.*—Monthly nurses would do well to advise patients to have all sheets, towels, etc., to be used in their confinement *boiled* at home, if they have been previously washed at a public laundry. Linen may carry germs of infection although it looks quite clean.

2. *A bed-pan.* Cost, from 3s. upwards. Bed-pans are made of pewter, tin, or earthenware. The best are slipper-shaped, with a cover. A very large earthenware pan with cover can be had for about 5s. Enamelled steel-ware slippers cost about 6s. 6d. These are best, as they cannot be cracked. Round ones made in two pieces so as to be easily washed and boiled, cost from 3s. 6d. The slipper-shaped are most convenient.

3. *A bed-bath*, for washing or douching the patient in bed. Cost from 7s. This is a very convenient utensil, but it is not actually necessary, for a large slipper bed-pan can be used as a bed-bath, being placed under the patient's thighs. The washing water is held in a small basin and the patient sponged from that into the bed-pan.\*

4. *A douche-tin.* Cost from 3s. to 10s. 6d. With this an enema can be given much more comfortably than with a syringe.

5. *Four binders.* Each  $1\frac{1}{4}$  to  $1\frac{1}{2}$  yards in length, and about 18 inches wide. These can be bought ready-made from ladies' outfitting shops. Cost, about 2s. each. It is cheaper to buy very stout unbleached calico, or linen towelling, or jean. Should be boiled and ironed before use.

\* A large pie-dish with broad edge makes a good makeshift bed-pan or bath for poor people

6. *A box of strong, unbendable, nickel-plated steel safety pins* (for pinning the binder). 8d. to 1s. a box. These do not rust.

7. *A skein of glazed linen thread*, to be cut into lengths of 12 inches. Two threads are knotted at each end and used for tying navel cord. (Should be soaked in antiseptic solution before use.)

8. *One pound of absorbent gamgee tissue*, to be used instead of sponge or flannel for washing patient. Should be cut into small pieces, each to be burnt after use.

9. *Two dozen wood-wool towels*—large—specially made for use after accouchement. 2s. per dozen.\* Diapers which have to be sent to the laundry should *never* be used in confinements. The nurse should bake the wood-wool towels in a hot oven for half an hour before use. This renders them aseptic and more capable of soaking up discharges. If they scorch a little, so much the better.

10. *A small bottle of "Soloid" mercuric potassium iodide*.† This makes a most reliable solution for disinfecting the doctor's or nurse's hands, mackintoshes, etc. One pellet in a pint of water. It is very poisonous. Instead of this *a bottle of Lysol* may be obtained. This is a good disinfectant for the hands.  $1\frac{1}{2}$  drachms to pint.

*Note*.—To disinfect instruments, boil them for at least ten minutes in a solution of washing soda and water (two teaspoonfuls to a pint). This will prevent steel from becoming rusty.

11. *A 2-oz. bottle of sublimated glycerine*. For doctor's or midwife's use for lubricating fingers.

12. *An ounce of permanganate of potash*. Cost, 3d. Put this into a glass-stoppered quart bottle, fill with water and shake. A dessertspoonful of this solution in a pint of water will prevent bad smells from bed-pans, etc. It is a most valuable deodorant, and excellent for internal syringing if there is any foul discharge. Its disadvantage is that it stains. Stains can be removed from linen by soaking for hours, or a day or two, in lemon juice and salt, and then washing in soap and water; from crockery by rubbing with a rag dipped in salt and lemon juice or vinegar.

13. *A feeding cup*.

14. *A little brandy*, for use in emergency.

15. *A bottle of vinegar* may be needed in case of hæmorrhage.

16. *Two strong new nail brushes*, for doctor's and nurse's use.

17. *A pair of scissors*—round pointed and rather blunt are best—for cutting navel cord.

18. *Some clean soft linen* for wiping the baby's mouth and eyes directly after birth, and a warm flannel to receive the infant in.

A good supply of well-aired sheets, towels, and a nightdress should be ready. Also a warm bed jacket. A roller towel to fasten on bed post is often needed for

\* Wood-wool can be bought by the pound, and antiseptic gauze by the yard. This is the cheapest way of buying for making large pads.

† Rings should be removed before using this as it injures gold. It is best to use clean boiled rain water or distilled water (4d. a gallon from chemist) for making mercury solutions, as hard water precipitates the mercury.



the patient to pull upon in labour. Two or three basins, a chamber utensil to receive after-birth (placenta), and plenty of hot and cold water should be in readiness. Some good nourishment such as soup, milk, custard, should be prepared for patient's use, as if the labour is long it is most important to support her strength.

**Warning.**—Monthly nurses should remember their responsibility for the patient's safety, and should see that nothing that may harbour contagion comes near her in her confinement. Syringes, enemas, and catheters should be *new*, never borrowed from friends. Mackintosh sheeting, if not new, should be scrubbed with the antiseptic (No. 10 in list) before use.

**Preparation of bed for confinement.**—Remove the valence from the right side of the bed. Cover the mattress with square of waterproof material, bringing it near to edge, then the under blanket and sheet as usual, then a strip of waterproof one yard wide, and long enough to reach across the bed and tuck in under the mattress at each side; this should be laid reaching from the bolster downwards. Over this is placed the draw-sheet, which is an ordinary sheet folded *lengthways*; one end is rolled up and tucked under the mattress at one side of the bed, the rest laid across the bed and tucked under the other side. Both ends should be secured to the mattress with safety pins. The draw-sheet saves frequent changing of the under-sheet, as if it becomes a little soiled or uncomfortably wrinkled the nurse can unpin it, draw a fresh piece under the patient, roll up what she draws and re-pin. The bed is now complete for use *after* confinement. There should next be laid upon it a piece of waterproof or tarred paper, a blanket folded square should be placed over this, or a wood-wool sheet, previously baked; these are covered by a folded sheet. On these the patient lies during delivery. When the sheet under her becomes wet or soiled it must be replaced with another; thus the bed clothes under the blanket are kept dry and clean. The advantage of all this is that when the child is born the folded sheet, blanket and waterproof are removed, and the patient will have the clean bed to lie on without being disturbed by any changing of the sheets.

**Dress during labour.**—When labour begins the patient should undress and put on a petticoat, then a clean nightdress, which is rolled up just above the waist, and pinned with safety pins. Over this a dressing-gown can be worn until the labour is far advanced, when the arms should be withdrawn from the sleeves of the gown. By this arrangement no dis-



turbance is caused after the baby is born, as the petticoat is then drawn down and taken away, the nightdress unpinned and drawn into place, and all raising of arms and back is avoided.

**Have everything ready in time.**—All the things mentioned in the list should be on a table or in a cupboard in the lying-in room before the confinement is expected. Then there will be no fuss or flurry, and if flooding or other emergency arise everything will be at hand and precious time will not be wasted in hunting for necessities.

If possible the nurse should be in the house before labour begins. If this cannot be managed everything should be ready, as just advised, for her to put her hands on, especially if she is a stranger and knows nothing of the house.

**What to have ready for the baby.**—Flannel wrap. Bassinette. Baby clothes, well aired. Baby's basket with scissors, needles and thread. Puff, and fuller's earth for powdering, also bottle of olive oil. Piece of white Castile soap. Half-a-yard of antiseptic wool for dressing navel. An ounce of oxide of zinc powder for same, and threads for tying navel, as in list at No. 7.

**How to bind.**—Take the binder rolled up all but about half-a-yard, hold the roll uppermost, pass the free end under the hips, then draw the rolled part and the free end together. Hold the roll firmly in one hand and pin with the other, drawing the binder as tightly as the patient feels to be comfortable. Pin with nickel-plated steel safety-pins about an inch apart, until the entire abdomen from waist down to below thigh sockets is enclosed by binder. Some nurses lay a diaper folded into a firm pad in the middle of the abdomen, and bind and pin over this.

**Important "Don'ts" for monthly nurses.**—Don't allow visitors, except perhaps one intimate, not talkative, friend, for first week.

Don't allow any distressing news or household worries to reach your patient—certainly not, in any circumstances, during first week.

Don't allow your patient to lie in a draught. This is highly dangerous, even in warm weather.

Don't allow the room to become close and stuffy; this, too, is dangerous.

Don't put off till a late hour getting ready for the night. This often makes the patient wakeful.

Don't neglect to inform the doctor of any complaints, of pain, etc., which your patient makes. A nurse treating these as "trifles," or "fidgets" may incur a very serious responsibility.

## CHAPTER LVIII

### CARE OF THE NEW-BORN INFANT

Care of the Eyes—Baby's First Bath—Care of the Navel Cord—How to Dress the Baby—Food on the First Day—Mixing the Milks—Sleep—When should Baby go out?

**How to handle the baby.**—A new-born baby is very slippery. Never receive it in your bare hands, or it may slip through them and fall on the floor. Take it up in warmed flannel.

**Care of the eyes.**—The very first thing for the nurse to see to after the navel cord is tied and cut, is the infant's eyes, which must be treated as directed elsewhere (p. 151). The mouth and nostrils should be cleared also, lest any secretion be drawn into the air passages. The little one may then be warmly covered up in its bassinette, out of draught, and left until the mother has been attended to. Remember that *ophthalmia of the new born* is the cause of thousands of cases of permanent blindness. This in the vast majority of cases is caused by neglect of the eyes after birth.

**Baby's first bath.**—The infant should be washed near the fire, with a screen round the nurse's chair, to keep off draughts. Temperature of bath water, 100° F. The nurse should wear a flannel apron, and have a warmed Turkey towel on her lap. Face, nose, and mouth must be carefully washed.

If any puffiness of eyelids is noticed the infant must be at once shown to the doctor, and his directions carefully obeyed. Satisfied that the eyes are all right, the nurse unwraps the baby and rubs it all over with warm olive oil\* to loosen the curdy substance that more or less adheres to the skin, then soaps head and body with a soft flannel, and plunges the infant up to the neck in the bath, sponges all the soap off, and lifts it on to the warm towel. Care should be taken to support the back of the head during the bath. If any white particles of curd remain on

\* Before commencing the bath, place the oil before the fire to warm.

the skin no time should be spent in rubbing them off, they will come off all right when dry. The bath should be as expeditious as possible, and the baby thoroughly dried. If there is dawdling and exposure the little one will surely take cold. It is very unsafe to dress it if not thoroughly dry. After the drying, fuller's earth should be dusted round the neck, under the arms, and in the bends of the joints. Between the thighs smear some white vaseline ; this is a better preservative than powder against chafing in this region.

**Always examine the navel cord.**—After the first bath the cord often shrinks, and must be at once re-tied, or hæmorrhage may result.

To dress the cord, cut a  $2\frac{1}{2}$  inch square of antiseptic wool, snip a hole in it, and pass the stump of the cord through. Dust with a little oxide of zinc powder round the navel region, fold the wool over the stump, lay it on the abdomen, and keep it in place with flannel swathe. *On no account* try to pick or pull off the stump as it withers. To do so may cause navel rupture. Every time the baby is washed the navel must be dressed in this way ; in a few days the withered stump will fall off. If there is oozing from the navel bathe in permanganate of potash solution and water (p. 271). If there is any bleeding dress with lint and a little friar's balsam. If healing is delayed tell the doctor.

**How to dress the baby.**—Looseness and warmth are the keynotes of dress for babies. *Never* compress the baby round the middle with a tight swathe ; this interferes with digestion and respiration, and is very mischievous, but some nurses do it because it makes the baby easier to hold ! If it is loosely dressed, they say, it feels like a bundle of rags ! The baby should be dressed for its own health and comfort, not for the convenience of those who hold it.

As to warmth, it is to be remembered that the infant has come from a temperature of nearly  $100^{\circ}$  F. It must be very gradually acclimatised to the much colder world which it has entered.

**Food on the first day.**—Never give butter and sugar, an old-fashioned method of giving a laxative, but very apt to produce colic. If the bowels do not act within a few hours of birth give half a teaspoonful of castor oil. The mother's milk is seldom secreted for a day or two, but the baby will come to no harm by a little fasting, as it enters the world with intestines full of a dark, pitchy substance, secreted from the liver, and till this is cleared away the infant is not in urgent need of food. If it cries and seems hungry, give a mixture of milk one part and

water two parts, sweetened and warm. It is not desirable to give sugar and water, which generally causes acidity and colic. The sooner the mother can allow the infant to take the breast the better.

**Mixing the milks : is it injurious ?**—Sometimes a mother could nurse her baby for eight or nine months if she had the relief of giving it a bottle of cow's milk and barley water two or three times in the twenty-four hours, but she is afraid of "mixing the milks." But this is a mere bugbear ; there is not the least fear of the mixing being injurious. It is much better (this is the opinion of the most experienced physicians) to give a baby part breast and part bottle feeding than bottle feeding only. If the mother is a robust young woman and can entirely suckle her baby herself, nothing can be so good for it ; but when she cannot do so altogether it will be well for the nurse to advise her that no harm—but only good—can come from supplementing the breast milk with the bottle at two or three stated intervals during the day. Do not give breast by day and bottle by night as is sometimes done, for then the breasts become too full and the milk suffers. Give the bottle alternately, or part alternately, with the breast.

**Sleep.**—The more the baby sleeps the better. It should only awake to be fed and washed. Do not allow it to be talked to and disturbed by admiring relatives. It cannot be kept too quiet for the first month.

**When should the baby go out ?**—This depends on the weather. In ten days from birth in fine summer weather ; for an hour or two on a fine sunny morning at a fortnight old in mild autumn or spring ; not during the first month in mid-winter. Be very careful to wrap up the baby warmly when going out. A gauze veil should cover the face, and a sunshade protect the eyes from light. A strong light is injurious to a baby's eyes. The hands and feet should be encased in wool gloves and boots. Chill to the extremities is very mischievous to an infant's health.







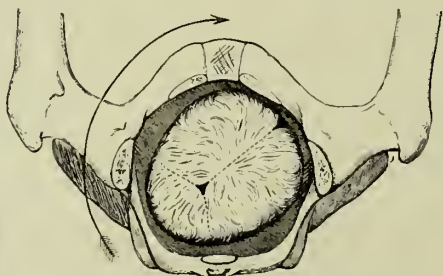
USUAL ATTITUDE OF CHILD IN UTERO.



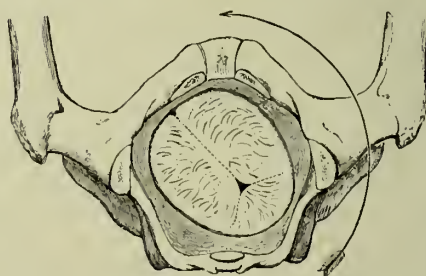
FIRST VERTEX PRESENTATION (FARABŒUF).



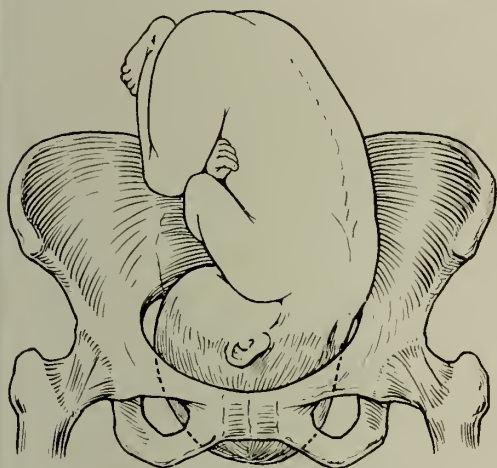
SECOND VERTEX PRESENTATION (FARABŒUF).



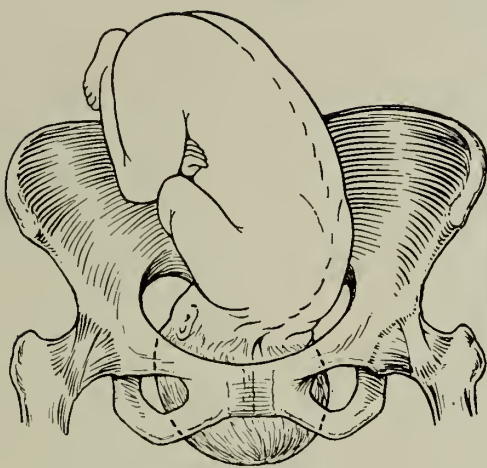
THIRD VERTEX PRESENTATION (FARABŒUF).



FOURTH VERTEX PRESENTATION (FARABŒUF).



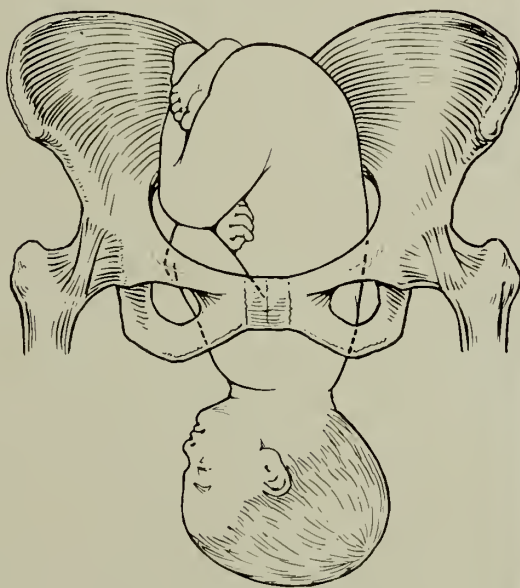
FLEXION COMPLETE.



INTERNAL ROTATION COMPLETE.



EXTENSION COMPLETE.



EXTERNAL ROTATION.



# GLOSSARY

By G. F. McCLEARY, B.A.(Cantab.), M.D.

**Ablactation** (ăb-lăk-tă-shŭn) [Lat. *ab*, from; *lactare*, to suckle]. Weaning, discontinuance of suckling.

**Abortifacients** (ăb-or-tě-fă-shĕnts) [Lat. *abortus*, miscarried; *facere*, to make]. Drugs used to procure abortion.

**Acarus** (ăk'-a-rŭs) [Gr. *a*, priv.; *keirein*, to cut (because so small)]. The *acari* form an order of the class *Arachnida*. One of the *acari*, the *Acarus scabiei*, is the cause of scabies, or the itch.

**Acetanilide** (ăs-ĕt-ăn'-il-id) [Lat. *acetum*, vinegar. Arab. *al*, the; *nîl*, dark blue]. Antifebrin. A drug used to lower the temperature in fever and as a nerve sedative.

**Acholia** (a-kôl'-i-a) [Gr. *a*, priv.; *chole*, bile]. Absence or deficiency of bile.

**Acne** (ăk'-nĕ) [Gr. *akmĕ*, a point]. A chronic skin disease characterised by an eruption of pimples, confined to the face, back, shoulders, and chest, and caused by an inflammation of the sebaceous glands and hair follicles.

**Aconite** (ăk'-ŏn-ĭte) [Gr. *akoniton*, the herb monk's-hood]. A poisonous drug obtained from the dried root of the plant wolfsbane, or blue-rocket. Sometimes given in febrile conditions.

**Acromegaly** (ăk-rŏ-mĕg'-a-lĕ) [Gr. *akros*, an extremity; *megas*, great]. A rare disease marked by enlargement of the bones, especially those of the hands and feet.

**Actinomycosis** (ăk-tĭn-ŏ-my-kŏ'-sis) [Gr. *aktis*, a ray; *mukĕs*, a fungus]. A chronic disease, occurring in man, but chiefly affecting horned cattle and swine, caused by the ray fungus.

**Acupressure** (ăk-u-prĕsh'-ŭr) [Lat. *acus*, a needle; *pressura*, pressure]. A method of arresting arterial bleeding by inserting a needle into the flesh so as to press across the artery.

**Acupuncture** (ăk'-u-pŭnk-chur) [Lat. *acus*, a needle; *punctum*, a prick]. An old method of treating certain painful affections, chiefly lumbago and sciatica, by inserting needles into the flesh.

**Addison's disease.** A chronic disease first described by Dr. Addison. The chief symptoms are anemia, debility, and a bronzed colouring of the skin, associated with disease of the suprarenal capsules.

**Adenitis** (ăd-ĕn-ĭ-tis) [Gr. *adĕn*, a gland; *itis*, inflammation]. Inflammation of a gland. Usually employed to denote inflammation of lymphatic glands.

**Adenoid** (ăd'-ĕn-ŏid) [Gr. *adĕn*, a gland; *eidōs*, form]. Resembling a gland. Adenoid vegetations is a term given to hypertrophy of the adenoid tissue that is normally found in the naso-pharynx.

**Adenoma** (ăd-ĕ-nŏ'-ma) [Gr. *adĕn*, a gland; *oma*, a tumour]. A tumour of glandular structure.

**Adipocere** (ăd'-ĭp-ŏ-sĕr) [Lat. *adeps*, fat; *cera*, wax]. A wax-like substance sometimes formed in dead bodies that have been buried in moist places.

**Ægophony** (ĕ-gŏf'-ŏ-nĕ) [Gr. *aix*, a goat; *phônĕ*, sound]. A peculiar bleating alteration of the voice heard on auscultation, a sign of the presence of pleuritic fluid.

**Ætiology** (ĕ-ti-ŏl'-ŏ-jĕ) [Gr. *aitia*, cause; *logos*, discourse]. The science of the causation of disease.

**Agraphia** (a-grăf'-i-a) [Gr. *a*, priv.; *graphein*, to write]. A mental condition in which there is complete or partial loss of the capacity to express ideas in writing.

**Albuminuria** (ăl-bu-mĭn-ŭ'-rĕ-a) [Lat. *albus*, white; Gr. *ouron*, urine]. A condition in which albumin is present in the urine.

**Allocheiria** (ăl-lŏ-kĭ'-rĕ-a) [Gr. *allos*, other; *cheir*, the hand]. A condition of abnormal sensibility in which cutaneous sensations are referred not to the part of the body touched, but to the corresponding part on the opposite side of the body.

**Alochia** (a-lŏ'-kĕ-a) [Gr. *a*, priv.; *lochĭa*, the lochia]. Absence of the lochia.

**Alopecia** (ăl-ŏ-pĕ'-sĕ-a) [Gr. *alopĕx*, a fox]. Absence of hair.

**Alveolitis** (ăl-vĕ-ŏ-lĭ'-tis) [Lat. *alveolus*, a hollow; Gr. *itis*, inflammation]. Inflammation of the alveolus, or socket, of a tooth.

**Amaurosis** (ăm-aw-rŏ'-sis) [Gr. *amauroein*, to darken]. Defective vision, without ostensible cause, and not remediable by the use of glasses.

**Ambulatory** (ăm'-bu-lă-tŏ-rĕ) [Lat. *ambulare*, to walk about]. A term used to indicate certain cases of acute diseases, chiefly typhoid fever, in which the patient continues to walk about for a considerable period after the onset of the disease.

**Amenorrhœa** (ă-mĕn-ŏ-rĕ'-a) [Gr. *a*, priv.; *mĕn*, month; *rheîn*, to flow]. Abnormal absence of the menstrual flow.

**Amnesia** (ăm-nĕ'-si-ă) [Gr. *amnĕsia*, forgetfulness]. Loss or defect of memory; generally used to indicate defective memory for words.

**Amphoric** (ăm-tŏr'-ik) [Gr. *amphora*, a two-handled jar]. A term used to describe a hollow breath-sound sometimes heard in auscultation. It resembles the sound produced by blowing into an empty vessel with a narrow neck.

**Anæsthesia** (ăn-ĕs-thĕ'-zĕ-a) [Gr. *an*, priv.; *aisthesis*, sensation]. Absence of sensation; sometimes used to signify loss of the sense of touch.

**Analgesia** (ăn-ăl-jĕ'-zĕ-a) [Gr. *an*, priv.; *algein*, to feel pain]. Absence of sensibility to pain.

**Anasarca** (ăn-a-sar'-ka) [Gr. *ana*, through; *sarx*, the flesh]. A diffuse effusion of serum into the subcutaneous connective tissue.

**Aneurysm** (ăn'-ŭr-izm) [Gr. *aneurysma*, a dilatation]. A tumour containing blood due to the local dilatation of an artery.

**Angiectasis** (ăn-jĕ-ĕk'-ta-sis) [Gr. *angeion*, a vessel; *ektasis*, expansion]. Abnormal dilatation of a blood-vessel.

**Angina pectoris** (ăn'-jĭn-a pĕck'-tŏr-ĭs) [Lat. *angŭre*, to press tightly; *pectus*, breast]. A paroxysmal disease characterised by sudden onset, severe pain over the heart, and sense of impending death.

**Angioma** (ăn-jĕ-ŏ'-ma) [Gr. *angeion*, a vessel; *oma*, a tumour]. A tumour composed of blood-vessels.



- Anhidrosis** (ân-hî-drô'-sis) [Gr. *an*, priv.; *hidōr*, water]. Absence or deficiency of perspiration.
- Ankylosis** (ang-kîf-ô'-sis) [Gr. *angulos*, crooked]. Stiffness or fixation of a joint.
- Ankylostomiasis** (âng-kî-lôs-to-mî'-a-sîs) [Gr. *angulos*, crooked; *stoma*, a mouth]. A disease caused by the *Ankylostoma duodenale*, or tunnel worm; affects miners and workers in tunnels.
- Anorexia** (ân-ô-rêx'-ê-a) [Gr. *an*, priv.; *orexis*, appetite]. Loss of appetite.
- Anosmia** (ân-oz'-mê-a) [Gr. *an*, priv.; *osmê*, smell]. Loss of the sense of smell.
- Anteflexion** (ân-tê-flêk'-shun) [Lat. *ante*, before; *flectere*, to bend]. A bending forwards; chiefly used to indicate the bending forwards of the body of the uterus at its junction with the cervix.
- Anteversión** (ân-tê-ver'-shun) [Lat. *ante*, before; *vertere*, to turn]. A displacement forwards; chiefly used to indicate the displacement forwards of the whole uterus in the pelvic cavity.
- Anthraxis** (ân-thrâk-ô'-sîs) [Gr. *anthrax*, coal; *nosos*, disease]. Miner's Lung. A condition in which the lungs become blackened from the deposit of minute particles of carbon.
- Anthrax** (ân'-thrâks) [Gr. *anthrax*, coal]. Malignant pustule. The disease caused by the anthrax bacillus.
- Aphagia** (a-fâ'-jê-a) [Gr. *a*, priv.; *phagō*, I eat]. Inability to swallow.
- Aphasia** (a-fâ'-zê-a) [Gr. *a*, priv.; *phao*, I speak]. Inability to speak, caused by disease of the brain.
- Aphthæ** (âf'-thê) [Gr. *haptō*, I inflame]. Small white patches in the mouth, usually inside the lower lip, and on the tip of the tongue. Occur chiefly in children.
- Aphthous** (âf'-thūs) [Gr. *haptō*, I inflame]. A term applied to conditions in which aphthæ are present.
- Appendectomy** (âp-pên-dêk'-tô-mê) [Lat. *ad*, to; *pendere*, to hang. Gr. *ektomê*, excision]. Removal of the vermiform appendix.
- Appendicitis** (âp-pên-dê-sî'-tis) [Eng. *appendix*; Gr. *itis*, inflammation]. Inflammation of the vermiform appendix.
- Arcus senilis** (âr-k'-ûs sê-nîl'-is) [Lat. *arcus*, arch; *senilis*, old]. A whitish circle on crescent just within the margin of the cornea, common in old people.
- Arthralgia** (âr-thrâl'-jê-a) [Gr. *arthron*, a joint; *algos*, pain]. Pain in a joint.
- Arthrectomy** (âr-thrêk'-tô-mê) [Gr. *arthron*, a joint; *ektomê*, excision]. Excision of a joint.
- Arthritis** (âr-thrî'-tis) [Gr. *arthron*, a joint; *itis*, inflammation]. Inflammation of a joint.
- Arthrotomy** (âr-thrôt'-ô-mê) [Gr. *arthron*, a joint; *temnein*, to cut]. The operation of cutting into a joint.
- Ascites** (âs-sî'-têz) [Gr. *askilês*, a kind of dropsy, from *askos*, a leathern sac]. An accumulation of serous fluid in the peritoneal cavity. Abdominal dropsy.
- Asphyxia** (âs-fîks'-i-a) [Gr. *a*, priv.; *sphuxis*, pulse]. Pulselessness. The condition in which respiration is interrupted.
- Asthenia** (a-sthên-ê-a) [Gr. *a*, priv.; *sthenos*, strength]. Want of strength.
- Astigmatism** (a-stîg'-mât-izm) [Gr. *a*, priv.; *stigma*, a point]. Want of symmetry in the curvature of the front surface of the eyeball, giving rise to imperfect refraction.
- Ataxia** (ât-âks'-ê-a) [Gr. *a*, priv.; *taxis*, order]. Irregularity of co-ordinated muscular movements. Often used to signify the disease locomotor ataxy.
- Atelectasis** (ât-ê-lêk'-tâs-is) [Gr. *atêlês*, imperfect; *ekstasis*, expansion]. Imperfection or absence of the expansion of the lungs that should occur at birth.
- Atheroma** (âth-êr-ô'-ma) [Gr. *athērê*, meal; *oma*, tumour]. A chronic degenerative disease of the inner coat of the arteries. The aorta, cerebral, and coronary vessels are those most commonly affected.
- Atony** (ât'-ô-nê) [Gr. *a*, priv.; *tonos*, tone]. Want of muscular power.
- Atresia** (a-trê'-zê-a) [Gr. *a*, priv.; *trêsis*, a hole]. Absence of a natural passage or opening.
- Atrichia** (a-trîk'-ê-a) [Gr. *a*, priv.; *thrix*, hair]. Absence of hair.
- Aura** (aw'-ra) [Gr. *aura*, a breath]. A peculiar sensation which is experienced before the onset of an epileptic or hysterical convulsion.
- Auscultation** (aws-kûl-tâ'-shun) [Lat. *ausculto*, I listen]. A method of examination which consists in applying the ear to the chest or other part of the body, either directly or by means of a stethoscope, and listening to certain sounds.
- Autopsy** (aw'-tôp-sî) [Gr. *autos*, self; *opsis*, sight]. A post-mortem examination.
- Balanitis** (bâl-ân-rî'-tis) [Gr. *balanos*, the glans penis; *itis*, inflammation]. Inflammation of the glans penis.
- Balbutis** (bâl-bu'-shê-êz) [Lat. *balbutire*, to stammer]. Stammering.
- Balneotherapeutics** (bâl-nê-ô-thêr-â-pû'-tîks) [Gr. *balneio*, a bath; *therapeuo*, I heal]. The department of therapeutics that deals with baths in the treatment of disease.
- Basedow's disease** (bâ'-ze-dow). Exophthalmic goitre.
- Beriberi** (ber'-i-ber-i). A disease common in the East, characterised by anæmia, dropsy, and muscular degeneration.
- Bilharzia** (bil-har'-zi-a). Distoma hæmatobium, a genus of small parasitic flukes discovered by Dr. Bilharz, of Cairo.
- Blepharitis** (blêf-â-rî'-tis) [Gr. *blepharon*, an eyelid; *itis*, inflammation]. Inflammation of the eyelids.
- Blepharoplegia** (blêf-âr-ô-plê'-jê-a) [Gr. *blepharon*, an eyelid; *plêgê*, a stroke]. Paralysis of an eyelid.
- Borborygmi** (bôr-bô-rîg'-mî) [Gr. *borboryzo*, I grumble]. Rumbling sounds produced by the movements of gas in the intestines.
- Bothrioccephalus latus** (bôth-rê-ô-sêf'-â-lûs lâ'-tûs) [Gr. *bolhron*, a pit; *kephalê*, the head]. A large tapeworm, the largest infesting man, the head of which is marked by two lateral pits or depressions. Occurs chiefly in Switzerland and N.E. Europe.
- Bougie** (boo'-zhê) [Fr. *bougie*, a candle]. A solid instrument for introduction into a natural passage, usually the urethra. It is chiefly used for dilating a stricture.
- Bradycardia** (brâd-ê-kar'-dê-a) [Gr. *bradus*, slow; *kardia*, the heart]. An abnormal slowness of the beat of the heart.
- Bromidrosis** (brô-mî-drô'-sîs) [Gr. *brômos*, stench; *idrôs*, sweat]. Offensive perspiration, most common in the feet.
- Bromism** (brô'-mîzm) [Gr. *bromos*, stench]. The condition produced by the excessive use of bromine.
- Bronchiectasis** (brông-kê-êk'-tâs-is) [Gr. *bronchos*, the windpipe; *ektasis*, expansion]. Dilatation of a bronchus.
- Bronchocele** (brông'-kô-sêle) [Gr. *bronchos*, the windpipe; *kêlê*, a tumour]. An enlargement of the thyroid gland; goitre.
- Bronchophony** (brông-kôf'-ô-nê) [Gr. *bronchos*, the windpipe; *phonê*, voice]. The normal resonance of the voice over the main bronchi as heard in auscultation. Over other parts of the lung it indicates consolidation of lung tissue, as in lobar pneumonia.



**Bruit** (broo'e) [Fr. *bruit*, noise]. A term used to denote certain abnormal sounds in connection with the heart, heard in auscultation.

**Bubo** (bū'-bō) [Gr. *boubon*, groin]. Swelling of the glands of the groin, usually due to venereal disease.

**Bubonocoele** (bū-bōn'-ō-sēl) [Gr. *boubon*, the groin; *kēlē*, a tumour]. A term applied to an inguinal hernia in which the bowel does not extend beyond the inguinal canal.

**Bulimia** (bū-līm'-ē-a) [Gr. *bou*, increase; *limos*, hunger]. Excessive hunger.

**Bulla** (būll'-a) [Lat. *bulla*, a bubble]. A blister.

**Bursitis** (bur-sī'-tis) [Lat. *bursa*, a purse; Gr. *itis*, inflammation]. Inflammation of a bursa.

**Cachexia** (kāk-ēks'-ē-a) [Gr. *kakos*, bad; *hexis*, a habit]. A chronic condition of ill-health associated with poor or depraved blood.

**Calculus** (kāl'-kū-lūs) [Lat. *calx*, chalk]. A concretion formed in the duct of a gland.

**Calipers** (kāl'-i-pēr) [Fr. *calibre*]. An instrument used for measuring various diameters of the body.

**Callus** (kāl'-ūs) [Lat. *callus*, hardness]. The new tissue formed round the ends of a broken bone in the process of repair.

**Calomel** (kāl'-ō-mēl) [Gr. *kalos*, fair; *melos*, black]. Subchloride of mercury.

**Cancerum oris** (kāng'-krūm o'-rīs) [Lat. *cancerum*, a sore; *oris*, of the mouth]. Gangrenous stomatitis. Noma. A severe gangrenous ulceration of the cheek, gum, and lips, occurring chiefly in ill-nourished children, especially after measles.

**Carbuncle** (kar'-būng-kl) [Lat. *carbunculus*, a small coal]. An acute specific local inflammation of the subcutaneous tissue, leading to death and separation of the tissues most involved.

**Carcinoma** (kar-sīn'-ō'-ma) [Gr. *karkinos*, a crab; *oma*, tumour]. Cancer.

**Cardialgia** (kar-dē-āl'-jē-a) [Gr. *kardia*, the heart; *algos*, pain]. Pain in the heart.

**Cardiograph** (kar'-dē-ō-grāf) [Gr. *kardia*, the heart; *grapho*, I write]. An instrument for registering the beat of the heart; the record obtained in this way is termed a Cardiogram.

**Caries** (kā'-rē-ēz) [Lat. *caries*, rottenness]. A destructive inflammation of bone corresponding to ulceration of the soft tissues.

**Caruncula** (kar-ūng'-kū-la) [Lat.] A small fleshy growth.

**Catalepsy** (kāt'-āl-ēp-sē) [Gr. *katalepsis*, a seizure]. A disease of the nervous system, characterised by periods of trance accompanied by a peculiar form of muscular rigidity.

**Catamenia** (kāt-a-mē'-nē-a) [Gr. *kata*, concerning; *mēn*, month]. Menstruation.

**Cataplasm** (kāt'-a-plazm) [Gr. *kata*, down; *plasso*, I mould]. A poultice.

**Catarrh** (kat-ahr') [Gr. *kata*, down; *rheō*, I flow]. An inflammation of a mucous membrane attended with increased secretion of mucus.

**Cavernous respiration**. A hollow sound heard on auscultation, indicating a cavity in the lung.

**Cellulitis** (sēll-u-lī'-tis) [Lat. *cellula*, a small cell; Gr. *itis*, inflammation]. Inflammation of cellular connective tissue, chiefly the areolar tissue beneath the skin.

**Celotomy** (sē-lōt'-ō-mē) [Gr. *kēlē*, a tumour; *temnō*, I cut]. The operation of relieving a strangulated hernia by cutting through the constriction.

**Cephalalgia** (sēf'-āl-āl'-jē-a) [Gr. *kephalē*, the head; *algos*, pain]. Pain in the head.

**Cephalhæmatoma** (sēf'-āl-hē-ma-tō'-ma) [Gr. *kephalē*, the head; *haima*, blood; *oma*, tumour]. A tumour formed on the head of a newly born infant by an

extravasation of blood occurring during labour. It is situated beneath the pericranium, and must be distinguished from the *caput succedaneum*, which is an effusion of serum external to the pericranium.

**Cephalotribe** (sēf'-āl-ō-trib) [Gr. *kephalē*, the head; *tribein*, to crush]. An instrument used to crush the foetal head to make extraction possible.

**Cephalotripsy** (sēf'-āl-ō-trip-sē) [Gr. *kephalē*, the head; *tri ein*, to crush]. The operation of crushing the foetal head in order that it may be extracted.

**Chlorosis** (klō-rō'-sis) [Gr. *chloros*, green]. A form of anæmia occurring most commonly in women from the age of puberty to twenty-one, and characterised by deficiency of hæmoglobin in the red blood-corpuscles.

**Cholæmia** (kōl-ē'-mē-a) [Gr. *chole*, bile; *haima*, blood]. A condition in which bile occurs in the blood.

**Cholecystectomy** (kōl'-ē-sīs-tēk'-tō-mē) [Eng. *cholecyst*; Gr. *chlomē*, an excision]. The operation of removing the gall-bladder.

**Cholecystostomy** (kōl'-ē-sīs-tōs'-tō-mē) [Eng. *cholecyst*; Gr. *stoma*, mouth]. The operation of forming an artificial opening into the gall-bladder.

**Cholecystotomy** (kōl'-ē-sīs-tōt'-ō-mē) [Eng. *cholecyst*; Gr. *temnō*, I cut]. The operation of cutting into the gall-bladder to remove gall-stones.

**Cholelithiasis** (kōl'-ē-lith-i'-a-sis) [Gr. *chole*, bile; *lithos*, a stone]. A condition in which gall-stones are present in the gall-bladder or in a gall-duct.

**Chorea** (kō-rē'-a) [Gr. *choreia*, a dance]. St. Vitus's dance. A disease of the nervous system characterised by involuntary twitchings of the muscles; most common in children.

**Choroiditis** (kō-roid-i'-tis) [Gr. *chorion*, the chorion; *itis*, inflammation]. Inflammation of the choroid coat of the eye.

**Chyluria** (klī-lū'-rē-a) [Gr. *chulos*, chyle; *ouron*, urine]. A disease of tropical or sub-tropical climates, the chief symptom of which is a milky appearance of the urine.

**Cinchona** (sīn-kō'-na) [from the name of the Countess of Chinchon]. Peruvian bark. The bark of the cinchona tree contains twenty-one alkaloids, of which quinine is the most important.

**Cinchonism** (sīn'-kō-nizm) [See Cinchona]. A condition produced by the excessive use of cinchona or its alkaloids. The chief symptoms are ringing in the ears, headache, and giddiness.

**Cirrhosis** (sīr'-ō'-sis) [Gr. *kirros*, reddish-yellow]. A term, usually applied to the liver, indicating a chronic inflammation of the connective tissue of an organ, which increases and gradually replaces the specialised tissues by which the function of the organ is performed.

**Clavus** (klā'-vūs) [Lat. *clavus*, a nail]. A form of neuralgia occurring in hysterical persons. Also used to signify a corn.

**Climacteric** (klī-māk'-tēr-ik) [Gr. *klimakēr*, a step of a ladder]. Originally meant the end of a certain stage in the life of an individual, but is more frequently used to denote the period when menstruation and the power of child-bearing cease.

**Clonic** (klōn'-ik) [Gr. *klonos*, tumultuous movement]. A term applied to short, spasmodic muscular contractions.

**Clyster** (klīs'-tēr) [Gr. *kluster*, an injection.] An enema, or injection by the rectum.

**Colotomy** (kō-lōt'-ō-inē) [Gr. *kolon*, the large intestine; *temnein*, to cut]. The operation of making an opening in the colon, usually performed for chronic obstruction of the bowel.

**Comedones** (kōm'-ē-dō'-nēz) [Lat. *comedo*, a glutton]. Blackheads. Small accumulations of sebaceous matter in the skin-follicles.

- Coryza** (kô-rî'-za) [Gr. *koruza*, a running from the head]. A cold in the head.
- Craniotomy** (krā-nē-ôt'-ô-mē) [Gr. *kranion*, the skull; *tomē*, a cutting]. The operation of perforating the head of the unborn child during labour to facilitate delivery.
- Curette** (kû-rēt') [Fr.]. An instrument used for removing diseased tissue by scraping.
- Cyanosis** (sî-ân-ô'-sis) [Gr. *kuanos*, blue]. A blue appearance of the surface of the body, usually the face and extremities, due to interference with the circulation and want of oxidation of the blood.
- Cystitis** (sis-tî'-tis) [Gr. *kustis*, the bladder; *itis*, inflammation]. Inflammation of the bladder.
- Cystoscope** (sis-tô'-skôpe) [Gr. *kustis*, the bladder; *skôpeō*, I view]. An instrument for inspecting the interior of the bladder.
- Cystotomy** (sis-tôt'-ô-mē) [Gr. *kustis*, the bladder; *temnein*, to cut]. The operation of making an opening in the bladder; usually performed to remove a stone.
- Dactylitis** (dāk'-tē-lî'-tis) [Gr. *daktylos*, a finger; *itis*, inflammation]. Inflammation of the finger.
- Decubitus** (dē-kû'-bit-ūs) [Lat. *de*, down; *cumbo*, I lie]. The lying posture.
- Defervescence** (dē-fēr-vēs'-ēns) [Lat. *de*, down; *fervesco*, I grow hot]. The decline of fever, marked by fall of temperature, slowing of the pulse, etc.
- Dementia** (dē-mēn'-shē-a) [Lat. *de*, from; *mens*, a mind]. A form of insanity characterised by mental weakness or deficiency rather than derangement.
- Dengue** (dēng'-gā) [West Indian]. Dandy fever; three-day fever; break-bone fever. An acute, infectious, eruptive fever, occurring in the West Indies, India, and other hot climates.
- Deodorants** (dē-ô'-dō-rānts) [Lat. *de*, from; *odoro*, I cause to smell]. Agents that destroy offensive smells. It is important to distinguish *deodorants* from *disinfectants*, which destroy germs.
- Depilatories** (dē-pil'-a-tēr-riz) [Lat. *de pilis*, without hair]. Agents that destroy superfluous hairs.
- Derbyshire neck**. A name for goitre, an affection which is not uncommon in Derbyshire.
- Dermatalgia** (dēr-māt-āl'-jē-a) [Gr. *derma*, the skin; *algos*, pain]. Pain in the skin.
- Dermatitis** (dēr-māt-i'-tis) [Gr. *derma*, the skin; *itis*, inflammation]. Inflammation of the skin.
- Desquamation** (dēs-kwā-mā'-shun) [Lat. *de*, signifying separation; *squama*, a scale]. Peeling of the skin; occurs most extensively in scarlet fever.
- Detergents** (dē-tēr'-jēnts) [Lat. *delergo*, I cleanse]. Substances that cleanse the skin.
- Diabetes** (di-a-bē'-teez) [Gr. *dia*, through; *baino*, I pass]. A condition characterised by an excessive discharge of urine. It occurs in two forms: (1) Diabetes mellitus, in which the urine contains sugar, and (2) Diabetes insipidus, or polyuria, in which the urine, though increased in quantity, contains no abnormal constituent.
- Diathesis** (di-āth'-ē-sis) [Gr. *diathesis*, a disposition]. A constitution that favours the development of a particular disease.
- Dirotism** (di'-krôt-izm) [Gr. *dis*, double; *krotos*, a stroke]. The second wave of the pulse. Is marked in conditions of low arterial tension, such as typhoid fever.
- Diplopia** (dip-lō'-pi-a) [Gr. *diploos*, double; *opsis*, sight]. Seeing double.
- Director** (di-rēk'-tur). A grooved instrument used to guide the passage of another instrument.
- Discrete** (dis-krēt') [Lat. *discerno*, I separate]. A term applied to certain rashes, the spots of which are separate from each other. Is the opposite of confluent.
- Diuresis** (di-u-rē'-sis) [Gr. *dia*, through; *oureo*, I pass water]. Increased excretion of urine.
- Dropsy** (drôp'-si) [Gr. *hudōr*, water; *ops*, aspect]. An accumulation of serous fluid in a serous cavity, such as the peritoneal cavity, or in the subcutaneous tissue. Dropsy in the latter situation is termed *œdema* when limited, and *anasarca* when widespread.
- Dynamometer** (di-nām-ôm'-ē-tēr) [Gr. *dynamis*, power; *metron*, a measure]. An instrument for measuring the power of the grip of the hand.
- Dyscrasia** (dis-krā'-zi-a) [Gr. *dys*, badly; *krasis*, mixture]. A diseased condition of the blood.
- Dysentery** (dis'-ēn-tēr-ē) [Gr. *dys*, with difficulty; *entéron*, the bowel]. An infectious disease characterised by ulceration of the large intestine. Prominent symptoms are pain, and diarrhoea, the motions frequently containing blood.
- Dysmenorrhœa** (dis-mēn-ô-rē'-a) [Gr. *dys*, with difficulty; *mēn*, a month; *reo*, I flow]. Painful menstruation.
- Dysphagia** (dis-fā'-jî-a) [Gr. *dys*, with difficulty; *phagō*, I eat]. Difficulty in swallowing.
- Dysphonia** (dis-fō'nē-a) [Gr. *dys*, with difficulty; *phônē*, the voice]. Difficulty in speaking.
- Dyspnoea** (disp-nē'-a) [Gr. *dys*, with difficulty; *pneō*, I breathe]. Difficulty of breathing.
- Dysuria** (dis-ū-rē'-a) [Gr. *dys*, with difficulty; *oureo*, I pass water]. Difficult or painful discharge of the urine.
- Eburnation** (ē-būr-nā'-shun) [Lat. *ebur*, ivory]. A process by which bones become white, smooth, and hard like ivory. Occurs in rheumatoid arthritis.
- Echymosis** (ēk-kî-mō'-sis) [Gr. *ek*, out of; *chumos*, juice]. An extravasation of blood beneath the skin. Usually the result of a bruise.
- Eclampsia** (ēk-lāmp'-si-a) [Gr. *eklampein*, to shine or burst forth]. A term used to denote convulsions, particularly the convulsions associated with pregnancy.
- Écraseur** (a-krā-zer') [Fr. *écraser*, to crush]. An instrument for the removal of a tumour or other projecting part. It consists of a metal loop, which on being tightened cuts through the tissues.
- Ecthyma** (ēk'-thē-ma) [Gr. *ekthuma*, a pustule]. A skin disease with an eruption of large flat pustules.
- Ectopic** (ēk-tôp'-ik) [Gr. *ek*, out of; *topos*, a place]. In an abnormal position. Ectopic gestation means gestation outside the uterus.
- Ectropion** (ēk-trô'-pē-ôn) [Gr. *ek*, out of; *trepo*, I turn]. A condition in which the eyelid is turned outward so that the inner surface is exposed. Usually the result of a scar.
- Eczema** (ēk'-zē-ma) [Gr. *ekzeō*, I bubble up]. A common inflammatory disease of the skin characterised by redness and itching and a great variety of lesions.
- Elaterium** (ē-lā-tēr'-rî-ūm) [Gr. *elaterios*, driving away]. A very powerful purgative obtained from the juice of the squirting cucumber, *Ecballium elaterium*.
- Elephantiasis** (ēl-ē-fān-tî-ās-is) [Gr. *elephas*, elephant]. A chronic disease, characterised by an enormous overgrowth of the skin and subcutaneous tissues, especially of the extremities and genitals.
- Embolism** (ēm'-bō-lizm) [Gr. *en*, in; *ballein*, to throw]. The plugging of a blood-vessel by a body that has been carried along in the circulation.

- Embryotomy** (ēm-brē-ōt'-ō-mē) [Eng. embryo; Gr. *temnein*, to cut]. The operation of cutting the foetus within the uterus in order that extraction may be effected.
- Emesis** (ēm'-ē-sīs) [Gr. *emeō*, I vomit]. Vomiting.
- Emmetropia** (ēm-ēt-rō'-pē-a) [Gr. *en*, within; *metron*, measure; *ōps*, the eye]. Normal vision.
- Emphysema** (em-fē-sē'-ma) [Gr. *en*, in; *phusaō*, I blow]. A condition in which air is present in parts or tissues of the body which are normally airless. The term is also applied to a disease of the lungs in which there is permanent dilatation of the pulmonary alveoli.
- Empyema** (ēm-pī-ē'-ma) [Gr. *en*, in; *puon*, pus]. A collection of pus in the pleural cavity.
- Encephalitis** (ēn-sēf-āl-i'-tis) [Gr. *enkephalos*, the brain; *itis*, inflammation]. Inflammation of the brain.
- Enchondroma** (ēn-kōn-drō'-ma) [Gr. *en*, in; *chondros*, cartilage; *oma*, tumour]. A tumour consisting of cartilage.
- Endemic** (ēn-dēm'-ik) [Gr. *en*, in; *dēmos*, a people]. A term applied to diseases that are more or less constantly found in certain localities.
- Endocarditis** (ēn-dō-kar-dī'-tis) [Gr. *endon*, within; *kardia*, the heart; *itis*, inflammation]. Inflammation of the endocardium or lining of the heart.
- Endometritis** (ēn-dō-mē-trī'-tis) [Gr. *endon*, within; *metra*, the womb; *itis*, inflammation]. Inflammation of the endometrium or lining membrane of the uterus.
- Enterectomy** (ēn-tēr-ēk'-tō-mē) [Gr. *enteron*, intestine; *chlomē*, excision]. The operation for the removal of part of the intestine.
- Enteritis** (ēn-tēr-i'-tis) [Gr. *enteron*, intestine; *itis*, inflammation]. Inflammation of the intestine.
- Enterocoele** (ēn-tēr-o-sēl) [Gr. *enteron*, intestine; *kēlē*, tumour]. A tumour containing a portion of the intestine.
- Enterostomy** (ēn-tēr-ōs'-tō-mē) [Gr. *enteron*, intestine; *stoma*, mouth]. An operation which consists of forming an artificial opening into the intestine.
- Entropion** (ēn-trō'-pī-ōn) [Gr. *en*, in; *trepein*, to turn]. A condition in which the eyelid is turned inward.
- Enucleation** (ē-nū-klē-ā'-shun) [Lat. *e*, out of; *nucleus*, a kernel]. The removal of an organ or tumour from its enclosing capsule.
- Enuresis** (ēn-ū-rē'-sīs) [Gr. *en*, in; *oureo*, I pass water]. Involuntary discharge of urine.
- Epididymitis** (ēp-i-dīd-īm-i'-tis) [Gr. *epi*, upon; *didymos*, the testes; *itis*, inflammation]. Inflammation of the epididymis, the small body above the testis.
- Epilation** (ēp-il-ā'-shun) [Lat. *e*, out of; *pilus*, a hair]. The extraction of hair.
- Epiphora** (ē-pif'-ōr-a) [Gr. *epi*, upon; *pherein*, to bear]. The condition in which the tears, instead of passing down the lachrymal duct, flow over the cheeks. It is due to stoppage of the duct or excessive secretion of tears.
- Epistaxis** (ēp-is-tāks'-īs) [Gr. *epistaxein*, to cause to drop]. Bleeding from the nose.
- Epithelioma** (ēp-i-thē-lī-ō'-ma) [Eng. epithelium; Gr. *oma*, a tumour]. A form of cancer arising from the epithelium covering the surface of the body.
- Epulis** (ēp'-u-līs) [Gr. *epi*, upon; *oula*, the gums]. A tumour arising from the jaws.
- Erethism** (ēr'-ē-thiz-m) [Gr. *erethismos*, irritation]. A state of excitement or irritability, either local or affecting the whole body.
- Erythema** (ēr-i-thē'-ma) [Gr. *eruthainein*, to make red]. A redness of the skin which disappears on pressure and reappears when the pressure is removed.
- Exanthem** (ēks-ān'-thēm) [Gr. *exanthema*, eruption]. Strictly speaking, this term means a cutaneous eruption, but it is now applied exclusively to a specific fever attended by a rash. Such fevers are termed *exanthemata*.
- Exomphalos** (ēks-ōm'-fā-lōs) [Gr. *ex*, out; *omphalos*, navel]. Umbilical hernia. The term sometimes applied to an unusual prominence of the navel.
- Exophthalmic goitre** (ēks-ōf-thāl'-mik goi'-tēr) [Gr. *ex*, out; *ophthalmos*, eye. Lat., *guttur*, throat]. Graves' disease or Basedow's disease. A disease in which there is protrusion of the eyeballs, enlargement of the thyroid gland, and rapid beat of the heart.
- Exophthalmos** (ēks-ōf-thāl'-mōs) [Gr. *ex*, out; *ophthalmos*, eye]. Protrusion of the eyeballs.
- Exostosis** (ēks-ōs-tō'-sīs) [Gr. *ex*, out; *osteon*, bone]. A bony outgrowth.
- Facies** (fā'-shi-ēz) [Lat. *facies*, the face]. The appearance of the face. The *facies hippocratica* is an expression of the face, described by Hippocrates, seen in persons approaching death or in a marked stage of exhaustion.
- Farcy** (far'-sē) [Lat. *farcire*, to stuff]. The form of glanders in which the lymphatic system is chiefly attacked.
- Fastigium** (fās-tij-ē-ūm) [Lat. *fastigium*, summit]. The acme of a disease.
- Favus** (fā'-vūs) [Lat. *favus*, a honeycomb]. A chronic, contagious skin disease, chiefly affecting the scalp, caused by the Achorian fungus.
- Fibroma** (fi-brō'-ma) [Lat. *fibra*, a thread; *oma*, a tumour]. A non-malignant tumour consisting of fibrous tissue.
- Fibromyoma** (fi-brō-mī-ō'-ma) [Lat. *fibra*, thread. Gr. *mys*, a muscle; *oma*, a tumour]. A tumour consisting of fibrous and muscular tissue.
- Fibrosis** (fi-brō'-sīs) [Lat. *fibra*, thread]. The development of fibrous tissue.
- Fistula** (fis'-tu-la) [Lat. *fistula*, a pipe]. A narrow, abnormal channel leading from a natural cavity or an abscess to the surface of the body, or forming a communication between two such cavities.
- Forcippressure** (for'-si-presh'-ur) [Lat. *forceps*, a pair of tongs; *pressura*, a pressing]. Squeezing the divided end of a blood-vessel with forceps to prevent bleeding.
- Formalin** (for'-ma-līn) [Lat. *formica*, an ant]. A liquid disinfectant consisting of a 40 per cent. solution of formic aldehyde in water.
- Fremitus** (frēm'-it-ūs) [Lat. *murmur*]. A term applied to the vibrations that can be felt by the hand placed on the chest in certain diseases of the heart and lungs. *Friction fremitus* is produced by the rubbing together of surfaces roughened by disease. *Vocal fremitus* is felt when the patient speaks. It is increased when the lung has become solid.
- Furunculus** (fu-rūng'-kū-lūs) [Lat. a boil]. A boil.
- Galactocoele** (gāl-āk'-tō-sēl) [Gr. *gala*, milk; *kēlē*, tumour]. A cystic tumour of the breast, formed by the stoppage of a milk duct.
- Galactorrhœa** (gāl-āk'-tō-rē-a) [Gr. *gala*, milk; *rheo*, I flow]. An excessive flow of milk.
- Gangrene** (gāng'-grēn) [Gr. *grainein*, to gnaw]. Mortification. Death *en masse* of a considerable portion of the body, as distinguished from molecular destruction or ulceration. The dead part is called a "slough," or when it consists of bone, a "sequestrum."



**Gastritis** (gās-trī'-tis) [Gr. *gastēr*, the stomach; *itis*, inflammation]. Inflammation of the stomach.

**Gastro-enteritis** (gās-trō-ēn-ter-ī'-tis) [Gr. *gastēr*, stomach; *enteron*, intestine; *itis*, inflammation]. Inflammation of the stomach and intestines. Common in children.

**Gastro-enterostomy** (gās-trō-ēn-ter-ōs'-tō-mē) [Gr. *gastēr*, stomach; *enteron*, intestine; *stoma*, mouth]. An operation by which a communication is made between the stomach and the small intestine. Usually performed because of an obstruction of the outlet of the stomach.

**Gastrostomy** (gās-trōs'-tō-mē) [Gr. *gastēr*, stomach; *stoma*, mouth]. The operation of forming an opening in the stomach through the abdominal wall, by which the patient can be fed. Performed in cases of stricture of the œsophagus.

**Gavage** (gav'-ahzh) [Fr. *gave*, the crop of a bird]. Feeding a patient through a tube which is passed down the œsophagus into the stomach.

**Genu-valgum** (jēn-u-val'-gum) [Lat. *genu*, knee; *valgus*, bowed out]. Knock-knee.

**Genu-varum** (jēn-u-vā'-rum) [Lat. *genu*, knee; *varum*, bowed in]. Bow-leg.

**Gingivitis** (jin-jī-vī'-tis) [Lat. *gingiva*, the gum; *itis*, inflammation]. Inflammation of the gums.

**Glauber's Salt** (glow-bērz) [from *Glauber*, the name of a German chemist]. Sodium sulphate.

**Glaucoma** (glaw-kō'-ma) [Gr. *glaukos*, sea-green; *oma*, tumour]. A disease of the eye, usually occurring in elderly persons, in which the eyeball becomes hard on account of its distension with fluid.

**Gleet** (glēt) [A.S., *glidan*, to glide]. The chronic stage of urethritis.

**Gloma** (gli-ō'-ma) [Gr. *glia*, glue; *oma*, a tumour]. A tumour consisting of neuroglia, the special connective tissue of the brain and spinal cord.

**Glossitis** (glōs-sī'-tis) [Gr. *glossa*, the tongue; *itis*, inflammation]. Inflammation of the tongue.

**Glycosuria** (gli-cō-sū'-ri-a) [Gr. *glukus*, sweet; *ouron*, urine]. The presence of glucose, or grape sugar, in the urine.

**Glycyrrhiza** (glis-sī-rī'-za) [Gr. *glukus*, sweet; *riza*, a root]. Liquorice root. A demulcent and mild laxative.

**Goitre** (goi'-tr) [Lat. *guttur*, throat]. Enlargement of the thyroid gland.

**Gonorrhœa** (gōn-ōr-rē'-a) [Gr. *gonē*, semen; *rheo*, I flow]. A specific infectious inflammation of the mucous membrane of, in men, the urethra, and, in women, the vagina, due to the gonococcus.

**Granulation** (grān-u-lā'-shun) [Lat. *granula*, a little grain]. Formation of new tissue in ulcers and wounds.

**Granuloma** (grān-u-lō'-ma) [Lat. *granula*, a little grain; Gr. *oma*, a tumour]. A small tumour or nodule, composed of granulation tissue.

**Grumous** (grū'-mūs) [Lat. *grumus*, a little heap]. Consisting of lumps.

**Gumma** (gūm'-ma) [Lat. *gummi*, gum]. A tumour characteristic of the tertiary stage of syphilis. It consists of granulation tissue.

**Gynecology** (gi-nē-kōl'-ō-jē) [Gr. *gunē*, a woman; *logos*, discourse]. The science that deals with the diseases of women.

**Hæma** [H.ÆMO].

**Hæmarthrosis** (hē-mar-thrō'-sis) [Gr. *haima*; *arthrosis*, a joint]. Effusion of blood into a joint.

**Hæmatemesis** (hē-māt-ēm'-ē-sis) [Gr. *haima*; *emesis*, vomiting]. The vomiting of blood.

**Hæmato**. A Greek prefix which means pertaining to the blood.

**Hæmatocèle** (hēm-āt-ō-sēl') [Gr. *hæmato*; *hēlē*, a tumour]. A tumour formed by the collection of blood in a cavity.

**Hæmatolysis** (hē-māt-ōl'-is-is) [Gr. *hæmato*; *lysis*, a solution]. Destruction of the blood or of the corpuscles.

**Hæmatoma** (hē-māt-ō'-ma) [Gr. *hæmato*; *oma*, a tumour]. A tumour containing blood.

**Hæmaturia** (hē-māt-ū'-rē-a) [Gr. *hæmato*; *ouron*, urine]. The discharge of urine containing blood.

**Hæmo**. A Greek prefix which means consisting of or containing blood; resembling blood.

**Hæmoglobinuria** (hē-mō-glō-bin-ū'-rē-a) [Gr. *hæmo*; Lat. *globus*, a round body; *ouron*, urine]. The presence of hæmoglobin in the urine, either dissolved out of the red cells, or derived from the disintegration of the red cells. A symptom of Raynaud's disease.

**Hæmophilia** (hē-mō-fil'-ē-a) [Gr. *hæmo*; *philein*, to love]. A disease characterised by an inherited tendency to hæmorrhage. Occurs chiefly in males, but the tendency is transmitted through the mother.

**Hæmoptysis** (hē-mōp'-tis-is) [Gr. *hæmo*; *ptuein*, to spit]. Spitting of blood from the lungs.

**Hæmorrhoids** (hēm-ōr-oidz) [Gr. *hæmo*; *rheo*, I flow]. Piles.

**Hamamelis** (ham-a-mē'-lis) [Gr. *hama*, together with; *mēlon*, apple tree]. The leaves of the witch-hazel. The preparations are used as styptics and astringents.

**Hectic fever** (hēk'-tik) [Gr. *hektikos*, habitual]. A fever characterised by daily intermissions, occurring in consumption, pyæmia, etc., and due to the absorption of toxic products from the process of suppuration.

**Helminthiasis** (hēl-min-thī'-a-sis) [Gr. *helmins*, a worm]. The condition of the body produced by the presence of worms.

**Hemianopia** (hēm-i-ān-ō'-pē-a) [Gr. *hemi*, half; *an*, priv.; *opsis*, sight]. Blindness in one half of the field of vision.

**Hemicrania** (hēm-i-krā'-nē-a) [Gr. *hemi*, half; *kranion*, head]. Headache affecting one side of the head only.

**Hemiplegia** (hēm-i-plē'-jī-a) [Gr. *hemi*, half; *plēgē*, stroke]. Paralysis of one side of the body.

**Hepatalgia** (hēp-a-tal'-jī-a) [Gr. *hēpar*, the liver; *algos*, pain]. Pain in the liver.

**Hepatitis** (hēp-a-tī'-tis) [Gr. *hēpar*, the liver; *itis*, inflammation]. Inflammation of the liver.

**Hernia** (hēr-nī'-a) [Lat. a rupture]. A protrusion of an organ or part of an organ through an opening in the wall of the cavity that normally contains it. The term is chiefly applied to a "rupture," which is a hernia of the intestine.

**Herniotome** (hēr-nī-ō-tōm) [Lat. *hernia*, a rupture; Gr. *tomē*, a cutting]. A knife used in the operation of herniotomy.

**Herniotomy** (hēr-nī-ōt'-ō-mē) [Lat. *hernia*, a rupture; Gr. *tomē*, a cutting]. The operation for the relief of strangulated hernia by cutting the constricting tissues.

**Herpes** (bēr'-pēz) [Gr. *herpein*, to creep]. An acute inflammation of the skin, characterised by an eruption of groups of vesicles. In the variety called *Herpes zoster*, popularly known as "shingles," the eruption extends like a girdle round half the chest.

**Herpetiform** (hēr-pēt'-i-form) [Gr. *herpein*, to creep; Lat. *forma*, form]. Resembling herpes.

**Hobnail liver**. A term applied to the condition of the liver in advanced atrophic cirrhosis, when the surface of the liver is studded with small projections. Also called gin-drinker's liver.

**Hodgkin's disease.** A disease, first described by Dr. Hodgkin in 1832, in which the chief symptom is a progressive enlargement of the lymphatic glands all over the body.

**Hordeolum** (hor-dē'-ō-lūm) [Lat. *hordeum*, a grain of barley]. A sty on the eyelid.

**Hydatid** (hi-dāt'-id) [Gr. *hudatis*, a watery vesicle]. A cyst containing clear fluid, formed by the larva of the tape-worm known as *Tania echinococcus*. Most common in the liver.

**Hydatidiform** (hi-da-tid'-i-form) [Gr. *hudatis*, a watery vesicle; Lat. *forma*, form]. Resembling a hydatid. *Hydatidiform mole* is a term applied to cystic degeneration of the chorion.

**Hydr-** [HYDRO-].

**Hydræmia** (hi-drē'-mī-a) [Gr. *hydr-*; *haima*, blood]. Watery blood.

**Hydrarthrosis** (hi-drār-thrō'-sis) [Gr. *hydr-*; *arthron*, a joint]. An accumulation of fluid in a joint.

**Hydro-** A Greek prefix which means water.

**Hydrocele** (hi'-drō-sēl) [Gr. *hydr-*; *hēlē*, a tumour]. A collection of serous fluid in the scrotum.

**Hydrocephalus** (hi-drō-sēl'-a-lūs) [Gr. *hydr-*; *kephalē*, the head]. Water on the brain. A collection of fluid in the serous cavities of the brain. *Acute hydrocephalus* is a term sometimes applied to tubercular meningitis.

**Hydronephrosis** (hi-drō-nēf-rō'-sis) [Gr. *hydr-*; *nephros*, kidney]. A disease of the kidney, in which there is an accumulation of urine in the pelvis of the kidney caused by a blockage of the ureter.

**Hydropericardium** (hi-drō-pe-rik-ar'-dī-ūm) [Gr. *hydr-*; Eng. *pericardium*]. A collection of serous fluid in the pericardium.

**Hydropneumothorax** (hi-drō-nū-mō-thōr-āks) [Gr. *hydr-*; *pneuma*, air; *thorax*, thorax]. The presence of serous fluid and gas in the pleural cavity.

**Hydrops** (hi'-drōps) [Gr. *hudrops*, dropsy]. Dropsy.

**Hydrosalpinx** (hi-drō-sāl'-pinkz) [Gr. *hydr-*; *salpingx*, a trumpet]. A collection of fluid in the Fallopian tube.

**Hygroma** (hi-grō'-ma) [Gr. *hygros*, moist; *oma*, a tumour]. A bursa distended with fluid.

**Hysocyamus** (hi-ō-sī'-a-mūs) [Gr. *huoskuamos*, henbane]. Henbane. A sedative drug.

**Hyper-** A Greek prefix meaning "above," or "excessive." It occurs in such words as *hyperacidity*, excess of acidity; *hyperpyrexia*, excessive degree of fever; *hyperæsthesia*, excessive sensitiveness, etc.

**Hypermetropia** (hi-pēr-mē-trō'-pi-a) [Gr. *hyper-*; *ōps*, sight]. Long sight. A defect of vision in which parallel rays are brought to a focus behind the retina. The opposite of myopia.

**Hypertrophy** (hi-pēr'-trō-fē) [Gr. *hyper-*; *trōphē*, nourishment]. Abnormal increase in size of an organ or tissue.

**Hypo-** A Greek prefix meaning "below" or "deficiency." It occurs in such words as *hypodermic*, beneath the skin; *hypoplasia*, defective development of a tissue or organ.

**Hypostasis** (hi-pōs'-ta-sis) [Gr. *hypo-*, under; *stasis*, a settlement]. A settling. A condition in which blood settles in a part owing to failure of the propelling forces of the circulation. Congestion of this kind is called *hypostatic congestion*.

**Hyster-Hystero-** Greek prefixes which mean of or belonging to the womb.

**Hysterectomy** (his-tē-rēk'-tō-mē) [Gr. *hyster-*; *ektomē*, a cutting out]. Excision of the uterus.

**Hysteropexy** (his'-tē-rō-pēks-ē) [Gr. *hystero-*; *pexis*, a fastening]. An operation for fixing the uterus to correct displacement.

**Hysterotomy** (his'-tē-rōt'-ō-mē) [Gr. *hystero-*; *temnein*, to cut]. Making an opening in the uterus, as in Cæsarian section.

**Ichthyol** (ik'-thē-ōl) [Gr. *ichthus*, a fish; Lat. *oleum*, oil]. A drug obtained by the distillation of a bituminous substance containing fossil fish. It is chiefly used for external application in certain skin diseases.

**Ichthyosis** (ik-thē-ō'-sis) [Gr. *ichthus*, a fish]. A chronic skin disease in which the surface presents an appearance resembling fish-scales.

**Icterus** (ik'-tēr-ūs) [Gr. *ikteros*, jaundice]. Jaundice. *Icterus neonatorum* is a special kind of jaundice, sometimes seen in infants during the first few days after birth.

**Idiopathic** (id-ē-ō-pāth'-ik) [Gr. *idios*, one's own *pathos*, disease]. A term applied to a morbid condition that appears to be independent of any known cause.

**Ileocolostomy** (il-ē-ō-kō-lōs'-tō-mē) [Gr. *eilein*, to roll *kolon*, colon; *stoma*, mouth]. The operation by which an artificial communication is made between the ileum and the colon.

**Ileostomy** (il-ē-ō-il-ē-ōs'-tō-mē) [Gr. *eilein*, to roll; *stoma*, mouth]. The operation by which an artificial communication is made between two parts of the ileum.

**Impetigo** (im-pēt'-i-gō) [Lat. *impelere*, to attack]. An acute skin affection attended with a pustular eruption. It occurs chiefly in children.

**Incontinence** (in-kōn'-tin-ēns) [Lat. *in*, not; *continere*, to contain]. Inability to control the escape of the urine or feces.

**Infarct** (in'-farkt) [Lat. *infarcire*, to stuff in]. A wedge-shaped area produced by the plugging of an artery. The production of infarcts is called *infarction*.

**Infiltration** (in-fil-trā'-shun) [Lat. *in*, into; *filtrare*, to strain]. The entrance into a tissue of a morbid product.

**Intertrigo** (in-tēr-tri'-gō) [Lat. *inter*, between; *terere*, to rub]. A slight inflammation of the skin produced by the irritation of two surfaces that are in contact.

**Intussusception** (in-tūs-sūs-ēp'-shun) [Lat. *intus*, within; *suscipere*, to receive]. A form of intestinal obstruction in which a part of the intestine slips into the part immediately beyond it. This is the most common form of intestinal obstruction in children.

**Iridectomy** (ir-id-ēk'-tō-mē) [Gr. *iris*, the rainbow; *ektomē*, excision]. The operation of removing part of the iris.

**Iridotomy** (ir-id-ōt'-ō-mē) [Gr. *iris*, the rainbow; *temnein* to cut]. The operation of cutting into the iris.

**Iritis** (i-ri'-tis) [Gr. *iris*, the rainbow; *itis*, inflammation]. Inflammation of the iris.

**Ischæmia** (is-kē'-mē-a) [Gr. *ischein*, to check; *haima* blood]. Local deficiency of blood.

**Jactitation** (jāk-tīt'-ā'-shun) [Lat. *jactitare*, frequentative of *jacare*, to throw]. A marked restlessness, or tossing about of the body, a grave symptom of certain diseases.

**Jejunocolostomy** (jē-jū-nō-kō-lōs'-tō-mē) [Lat. *jejunus*, empty. Gr. *kolon*, colon; *stoma*, mouth]. The operation of making an artificial communication between the jejunum and the colon.

**Jejunoleostomy** (jē-jū-nō-il-ē-ōs'-tō-mē) [Lat. *jejunus*, empty; *ileum*, ileum. Gr. *stoma*, mouth]. The operation of making an artificial opening between the jejunum and the ileum.

**Jejunostomy** (jē-jū-nōs'-tō-mē) [Lat. *jejunus*, empty; Gr. *stoma*, mouth]. The operation of making an artificial opening into the jejunum through the abdominal wall.



- Keloid** (kê'-loid) [Gr. *kêlis*, a scar, or *chêlê*, a claw; *eidos*, form]. An overgrowth of fibrous tissue, usually occurring at the site of a scar.
- Kerat-** **Kerato-** Greek prefixes denoting relation to the cornea or to horn.
- Keratitis** (kêr-ât-tî'-tis) [Gr. *kerat-*; *itis*, inflammation]. Inflammation of the cornea.
- Keratoid** (kêr'-ât-oid) [Gr. *kerat-*; *eidos*, form]. Horn-like.
- Keratome** (kêr'-a-tôme) [Gr. *kerat-*; *temnein*, to cut]. A surgical knife, the blade of which is shaped like a trowel, used for cutting into the cornea in the operation of iridectomy.
- Keratos** (kêr-ât-tô'-sis) [Gr. *keras*, horn]. Any condition of the skin in which there is an overgrowth of the horny epithelium.
- Keratotomy** (kêr-ât-ôt'-ô-mê) [Gr. *kerato-*; *temnein*, to cut]. The operation of cutting into the cornea.
- Kyphosis** (ki-fô'-sis) [Gr. *kuphos*, bent forwards, stooping]. The form of curvature of the spine in which the convexity of the curve is directed backwards. Hump-back.
- Lachrymation** (lâk-rim-â'-shun) [Lat. *lacrima*, a tear]. Excessive secretion of tears.
- Lagophthalmos** (lâg-ôf-thâl'-môs) [Gr. *lagôs*, a hare; *ophthalmos*, eye]. A condition in which the power to close the eyes is lost.
- Laminectomy** (lâm-in-êk'-tô-mê) [Lat. *lamina*, a layer; Gr. *ekômê*, excision]. The operation of removing the vertebral lamina.
- Laparotomy** (lâp-âr-ôt'-ô-mê) [Gr. *lapara*, loin; *temnein*, to cut]. The operation of opening the abdominal cavity.
- Laryngectomy** (lâr-in-jêk'-tô-mê) [Gr. *larunx*, larynx; *ekômê*, excision]. The operation of removing the larynx.
- Laryngismus stridulus** (lâr-in-jiz'-mûs strîd'-u-lûs) [Gr. *larunx*, larynx; Lat. *stridulus*, hissing, creaking]. A spasmodic affection of the larynx, peculiar to children, characterised by great difficulty of breathing and a crowing noise.
- Laryngo-** A Greek prefix signifying relation to the larynx.
- Laryngoplegia** (lâr-in-gô-plê'-jê-a) [Gr. *laryngo-*; *plêgê*, stroke]. Paralysis of one or more muscles of the larynx.
- Laryngoscopy** (lâr-in-gôs'-kô-pê) [Gr. *laryngo-*; *skopein*, to examine]. The examination of the interior of the larynx by the laryngoscope.
- Laryngostenosis** (lâr-rin-gôs-tên-ô'-sis) [Gr. *laryngo-*; *stenos*, narrow]. Stricture of the larynx.
- Laryngotomy** (lâr-in-gôt'-ô-mê) [Gr. *laryngo-*; *temnein*, to cut]. The operation of cutting into the larynx.
- Lavage** (lav'-ahzh) [Fr. *laver*, to wash]. The washing out of the stomach.
- Leptomeningitis** (lêp-tô-mên-in-jî'-tis) [Gr. *leptos*, slight; *meninx*, membrane; *itis*, inflammation]. Inflammation of the pia mater of the brain or spinal cord.
- Leucocytosis** (lû-kô-sî-to'-sis) [Gr. *leukos*, white; *kutos*, vessel, cell]. An increase in the number of the white blood-corpuscles.
- Leucoma** (lû-kô'-ma) [Gr. *leukos*, white]. An opacity of the cornea, the result of an injury.
- Leucorrhœa** (lû-kô-rê'-â) [Gr. *leukos*, white; *rhêô*, I flow]. A whitish discharge from the vagina, popularly known as the "whites."
- Leukæmia** (lû-kê'-mi-a) [Gr. *leukos*, white; *haima*, blood]. Leucocythæmia. A chronic disease, characterised by enlargement of the spleen and permanent increase of the white blood-corpuscles.
- Lichen** (lî'-kên) [Gr. *leichen*, lichen]. A term given to a group of skin diseases characterised by an eruption of papules.
- Lientitis** (li-en-i'-tis) [Lat. *lien*, spleen; Gr. *itis*, inflammation]. Inflammation of the spleen.
- Lipoma** (lip-ô'-ma) [Gr. *lipos*, fat; *oma*, a tumour]. A fatty tumour.
- Lithoscope** (lith'-ô-skôp) [Gr. *lithos*, stone; *skopein*, to examine]. An instrument for examining for the presence of calculi in the bladder.
- Lithotomy** (lith-ôt'-ô-mê) [Gr. *lithos*, stone; *temnein*, to cut]. The operation of cutting into the bladder to remove a calculus.
- Lithotrite** (lith'-ô-trit) [Gr. *lithos*, stone; Lat. *terere*, to rub]. The instrument by which the stone is crushed in the operation of lithotripsy. It consists of two blades, between which the stone is crushed.
- Lithotripsy** (lith-ôt'-rit-ê) [Gr. *lithos*, stone; Lat. *terere*, to rub]. The operation by which a stone in the bladder is crushed into small fragments by an instrument, called a lithotrite, which is passed into the bladder through the urethra.
- Lochia** (lô'-ki-a) [Gr. *lochios*, pertaining to child-birth]. The discharge from the genitals that occurs during the first few weeks after child-birth.
- Lordosis** (lor-dô'-sis) [Gr. *lordoun*, to bend inward]. An abnormal curvature of the spine, with the convexity forwards.
- Lymphadenitis** (lûm-fâd-ên-i'-tis) [Lat. *lymphæ*, lymph. Gr. *adên*, gland; *itis*, inflammation]. Inflammation of the lymphatic glands.
- Lymphangitis** (lûm-fân-jî'-tis) [Lat. *lymphæ*, lymph. Gr. *angeion*, vessel; *itis*, inflammation]. Inflammation of a lymphatic vessel.
- Lysis** (lî'-sis) [Gr. *luen*, to lose]. The gradual decline of a fever. The term is opposed to "crisis," which means the sudden ending.
- MacBurney's Spot** is a small area at which the tenderness in appendicitis is specially marked. It is situated 2½ inches from the right anterior superior iliac spine on a line drawn from the latter point to the navel.
- Malacia** (mâl-â'-shê-a) [Gr. *malakia*, a softening]. A morbid softening of tissue.
- Marasmus** (mâr-âz'-mûs) [Gr. *marainein*, to waste away]. A general wasting of the body.
- Mastitis** (mâs-tî'-tis) [Gr. *mastos*, breast, nipple; *itis*, inflammation]. Inflammation of the breast.
- Mastodynia** (mâs-tô-dîn-ê'-a) [Gr. *mastos*, breast *odynê*, pain]. Pain in the breast.
- Mastoiditis** (mâs-toid-i'-tis) [Eng. mastoid; Gr. *itis*, inflammation]. Inflammation of the mastoid cells.
- Melæna** (mêl-ê'-na) [Gr. *melas*, black]. The discharge of fæces containing blood that has been altered in the intestines, the alteration including the conversion of part of the blood into sulphide of iron.
- Melanin** (mêl'-ân-in) [Gr. *melas*, black]. A black pigment occurring normally in the choroid and other parts of the body, and abnormally in melanotic tumours and in Addison's disease.
- Melanism** (mêl'-ân-izm) [Gr. *melas*, black]. The abnormal deposit of dark pigment.
- Melanosarcoma** (mêl-ân-ô-sar-kô'-ma) [Gr. *melas*, black; *sark*, flesh; *oma*, tumour]. A sarcoma containing the dark pigment, melanin.
- Melanosis** (mêl-ân-ô'-sis) [Gr. *melas*, black; *nosos*, disease]. A condition in which there is a tendency for a dark pigment to be deposited in the tissues.
- Meningitis** (mên-in-jî'-tis) [Gr. *meninx*, membrane; *itis*, inflammation]. Inflammation of the membranes of the brain or spinal cord.

- Meningocele** (mēn-ing'-gō-sēl) [Gr. *meninx*, membrane; *kēlē*, tumour]. A protrusion of the membranes of the brain or spinal cord through the skull or spinal column.
- Menopause** (mēn'-ō-pawz) [Gr. *mēn*, month; *pausis*, cessation]. The "change of life." The normal cessation of menstruation, which usually occurs between the ages of forty-five and fifty.
- Menorrhagia** (mēn-or-ā'-jī-ah) [Gr. *mēn*, month]. Excessive menstrual flow.
- Meteorism** (mēt'-tē-or-izm) [Gr. *metēōrisein*, to elevate]. Tympanites. Distension of the abdomen with gas in the intestines.
- Metritis** (met-rī-tis) [Gr. *metra*, womb; *itis*, inflammation]. Inflammation of the uterus.
- Metrorrhagia** (mēt-ror-ā'-jī-a) [Gr. *metra*, womb]. Bleeding from the uterus apart from the menstrual flow.
- Microcephalic** (mī-kro-sef-āl'-ik) [Gr. *mikros*, small; *kēphalē*, the head]. Having an abnormally small head. The term is applied to a form of idiocy in which this condition is present.
- Migraine** (mē'-grān) [Fr. *migraine*]. "Sick headache." A form of headache, usually affecting one side only of the head, which recurs periodically and is attended by sickness and disturbed vision.
- Miliaria** (mīl-ē-ā'-rī-a) [Lat. *miliūm*, millet]. An inflammatory affection of the sweat glands, characterised by an eruption of papules and vesicles and a tingling sensation. One form of miliaria is known as "prickly heat."
- Monoplegia** (mōn-ō-plē'-jē-a) [Gr. *monos*, single; *plēgē*, stroke]. Paralysis of one limb, or of one muscle, or of a group of muscles.
- Morbili** (mor-bil'-li) [Lat. dim. of *morbus*, disease]. Measles.
- Multipara** (mūl-tip'-a-ra) [Lat. *multus*, many; *parere*, to bring forth]. A woman who has borne more than one child.
- Myalgia** (mī-ā'-jī-a) [Gr. *mus*, muscle; *algos*, pain]. Pain in the muscles.
- Mydriasis** (mid-rī-ās-is) [Gr. *mudriasis*]. Abnormal dilatation of the pupil of the eye.
- Myelitis** (mī-ēl'-ī-tis) [Gr. *muclos*, marrow; *itis*, inflammation]. Inflammation of the spinal cord.
- Myo-** A Greek prefix which means "pertaining to the muscles."
- Myocarditis** (mī-ō-kar-dī'-tis) [Gr. *myo-*; *kardia*, heart; *itis*, inflammation]. Inflammation of the heart muscle.
- Myoma** (mī-ō'-ma) [Gr. *myo-*; *oma*, tumour]. A tumour composed of muscular tissue.
- Myomectomy** (mī-ō-mēk'-tō-mē) [Gr. *myo-*; *oma*, tumour; *ektomē*, excision]. The operation of excising a myoma, usually a uterine myoma.
- Myopia** (mī-ō'-pi-a) [Gr. *muēin*, to close; *ōps*, the eye]. Short sight. A condition in which parallel rays are brought to focus in front of the retina, owing to an abnormal convexity of the refracting surfaces, or an abnormal length of the antero-posterior diameter of the eyeball. The condition is the opposite of hypermetropia, or long sight.
- Myosis** (mī-ō'-sis) Gr. *muēin*, to close]. Abnormal narrowing of the pupil of the eye.
- Myositis** (mī-ō-sī'-tis) [Gr. *myo-*; *itis*, inflammation]. Inflammation of a muscle.
- Myotome** (mī-ō-tōm) [Gr. *myo-*; *temnein*, to cut]. The instrument used for performing myotomy.
- Myotomy** (mī-ōt-ō-mē) [Gr. *myo-*; *temnein*, to cut]. The operation of cutting through a muscle.
- Myringitis** (mīr-in-jī'-tis) [Gr. *myringa*, drum-mem-
- brane; *itis*, inflammation]. Inflammation of the membrana tympani.
- Myxoedema** (mīks-ē-dē'-ma) [Gr. *muxa*, mucus; *oidēma*, swelling]. A disease of nutrition caused by atrophy of the thyroid gland. It is associated with dullness of intellect, slow speech, and weakness. There is a deposit of mucoid material in the subcutaneous connective tissue, and the hands assume a "spade-like" appearance.
- Myxoma** (mīks-ō'-ma) [Gr. *muxa*, mucous; *oma*, tumour]. A tumour consisting of undeveloped connective tissue and mucin.
- Nævus** (nē'-vūs) [Lat.]. A mass of dilated vessels.
- Nanoid** (nā'-noid) [Gr. *nanos*, dwarf; *eidos*, form]. Dwarf-like.
- Necropsy** (nēk-rōp-sē) [Gr. *nekros*, dead]. A post-mortem examination.
- Necrosis** (nēk-rō'-sis) [Gr. *nekros*, dead]. Death of a part. The term is often used to denote the death of bone, the portion of dead bone being called a "sequestrum."
- Nematoda** (nēm-āt-ō'-da) [Gr. *nēma*, thread; *eidos*, form]. Thread-worms.
- Neoplasm** (nē'-ō-plāzm) [Gr. *neos*, new; *plassein*, to mould]. A new growth.
- Nephrectomy** (nēf-rēk'-tō-mē) [Gr. *nephros*, kidney; *ektomē*, excision]. The operation for removal of the kidney.
- Nephritis** (nēf-rī'-tis) [Gr. *nephros*, kidney; *itis*, inflammation]. Inflammation of the kidney.
- Nephro-** A Greek prefix which means "pertaining to the kidney."
- Nephrolithiasis** (nēf-rō-līth-ī'-ās-is) [Gr. *nephro-*; *lithos*, stone]. The condition in which calculi are formed in the kidney.
- Nephrolithotomy** (nēf-rō-līth-ōt'-ō-mē) [Gr. *nephro-*; *lithos*, stone; *temnein*, to cut]. The operation of cutting into the kidney to remove a calculus.
- Nephrorrhagia** (nēf-ror-ā'-jē-a) [Gr. *nephro-*; *rhegmunai*, to burst]. Bleeding from the kidney.
- Nephrorrhaphy** (nēf-ror'-a-fē) [Gr. *nephro-*; *rhaphe*, a suture]. The operation of fixing a movable kidney in position with stitches.
- Nephrotomy** (nēf-rōt'-ō-mē) [Gr. *nephro-*; *temno*, to cut]. The operation of cutting into the kidney.
- Neur-** A prefix which means "pertaining to or connected with a nerve or the nervous system."
- Neurasthenia** (nū-rās-thē'-ni-a) [Gr. *neur-*; *astheneia*, weakness]. A condition due to the exhaustion or debility of the nerve centres.
- Neurectasis** (nū-rēk'-tās-is) [Gr. *neur-*; *ektasis*, stretching]. Nerves-stretching.
- Neurectomy** (nū-rēk'-tō-mē) [Gr. *neur-*; *ektomē*, excision]. The operation of cutting out a part of a nerve.
- Neuritis** (nū-rī'-tis) [Gr. *neur-*; *itis*, inflammation]. Inflammation of a nerve.
- Neuro-** [NEUR-].
- Neuroma** (nū-rō'-ma) [Gr. *neur-*; *oma*, tumour]. A tumour arising from a nerve.
- Neurorrhaphy** (nū-ror'-a-fē) [Gr. *neuron*, a nerve; *rhaphe*, a suture]. The operation of sewing together the ends of a divided nerve.
- Neurosis** (nū-rō'-sis) [Gr. *neuron*, a nerve]. A disease of the nervous system for which no structural cause can be detected.
- Neurotomy** (nū-rōt'-ō-mē) [Gr. *neuro-*; *temnein*, to cut]. The division of a nerve.
- Nictitation** (nik-tīt-ā'-shun) [Lat. *nictitare*, to wink]. A frequent involuntary winking of the eyelids.

- Noma** (nō'-ma) [Gr. *nomē*, a corroding sore]. A name for cancerum oris.
- Nullipara** (nūl-īp'-ār-a) [Lat. *nullus*, none; *parere*, to bring forth]. A woman who has never borne a child.
- Nutation** (nū-tā'-shun) [Lat. *nutare*, to nod]. Involuntary nodding of the head.
- Nux vomica** (nūks vōm'-ik-a) [Lat. *nux*, a nut; *vomere*, to vomit]. A drug obtained from an Indian tree called *Strychnos nux vomica*. It contains the alkaloid strychnine, and is used as a tonic.
- Nyctalopia** (nik-tāl-ō'-pē-a) [Gr. *nux*, night; *ōps*, the eye]. A condition in which the sight is better at night than in the day.
- Nystagmus** (nī-stāg'-mūs) [Gr. *nystazein*, to nod in sleep]. Involuntary oscillating movements of the eyeballs.
- Odontoid** (ō-dōn'-toid) [Gr. *odous*, a tooth; *eidōs*, form]. Resembling a tooth.
- Odontoma** (ō-dōn-tō'-ma) [Gr. *odous*, a tooth; *oma*, tumour]. A tumour arising from the teeth.
- Oedema** (ē-dē'-ma) [Gr. *oidēma*, swelling]. Dropsical swelling due to the passage of fluid from the vessels into the tissues. When an oedematous part is pressed with the finger a depression is formed which disappears when the pressure is removed.
- Œsophagostomy** (ē-sōf-āg-ōs'-tō-mē) [Gr. *oisophagos*, œsophagus; *stoma*, mouth]. The operation of forming an artificial opening into the œsophagus.
- Œsophagotomy** (ē-sōf-āg-ōt'-ō-mē) [Gr. *oisophagos*, œsophagus; *temnein*, to cut]. The operation of cutting into the œsophagus.
- Oligamia** (ōl-īg-ē'-mē-a) [Gr. *oligos*, few; *haima* blood]. Deficiency of blood.
- Omphalocele** (ōm-fal'-ō-sēl) [Gr. *omphalos*, the navel; *hēlē*, a tumour]. Umbilical hernia.
- Onychia** (ōn-ik'-ē-a) [Gr. *onyx*, a nail]. Inflammation of the matrix of the nail.
- Onychosis** (ōn-ik-ō'-sis) [Gr. *onyx*, a nail]. Any disease of the nails.
- Oophorectomy** (ō-ō-for-ēk'-tō-mē) [Gr. *ōon*, an egg; *ektomē*, excision]. The operation for the removal of the ovaries.
- Oophoritis** (ō-ōf-or-ī'-tis) [Gr. *ōon*, an egg; *itis*, inflammation]. Inflammation of the ovaries.
- Ophthalmia** (ōf-thāl'-mī-a) [Gr. *ophthalmos*, the eye]. Inflammation of the eye. The term is chiefly used to denote inflammation of the conjunctiva.
- Ophthalmoplegia** (ōf-thāl-mō-plē'-jī-a) [Gr. *ophthalmos*, the eye; *plēgē*, stroke]. Paralysis of the muscles of the eye.
- Opisthoroncos** (ō-pīs-thōt'-ōn-ōs) [Gr. *opisthen*, behind; *lonos*, stretching]. A condition in which the head is bent backwards owing to spasmodic contraction of the muscles of the back; occurs in tetanus.
- Orchidectomy** (or-kid-ēk'-tō-mē) [Gr. *orchis*, testicle; *ektomē*, excision]. Castration. Removal of the testicle.
- Orchidotomy** (or-kid-ōt'-ō-mē) [Gr. *orchis*, testicle; *temnein*, to cut]. The operation of cutting into the testicle.
- Orchitis** (or-ki'-tis) [Gr. *orchis*, testicle; *itis*, inflammation]. Inflammation of the testicles.
- Orthopædic** (or-thō-pē'-dik) [Gr. *orthos*, straight; *pais*, a child]. This term is applied to measures that are adopted for the correction of deformities.
- Orthopnoea** (or-thōp-nē'-a) [Gr. *orthos*, straight; *pnein*, to breathe]. A condition of difficult breathing in which the patient finds most relief when in an upright position.
- Osteitis** (ōs-tē-ī'-tis) [Gr. *osteo-*; *itis*, inflammation]. Inflammation of bone.
- Osteo-** A Greek prefix signifying connection with or relation to bone.
- Osteoma** (ōs-tē-ō'-ma) [Gr. *osteo-*; *oma*, tumour]. A bony tumour.
- Osteomalacia** (ōs-tē-ō-māl-ā'-shē-a) [Gr. *osteo-*; *malakia*, softness]. Softening of bone, due to gradual loss of the earthy parts.
- Osteomyelitis** (ōs-tē-ō-mī-ēl-ī'-tis) [Gr. *osteo-*; *myelos*, marrow; *itis*, inflammation]. Inflammation of the marrow of bone.
- Osteosarcoma** (ōs-tē-ō-sar-kō'-ma) [Gr. *osteo-*; *sarx*, flesh; *oma*, tumour]. A sarcoma partly composed of bony tissue.
- Osteotome** (ōs'-tē-ō-tōm) [Gr. *osteo-*; *tomē*, a cutting]. An instrument used for cutting bone.
- Osteotomy** (ōs-tē-ōt'-ō-mē) [Gr. *osteo-*; *temnein*, to cut]. The operation of dividing a bone.
- Osteotrite** (ōs'-tē-ō-trīt) [Gr. *osteo-*; *tribein*, to rub]. An instrument for scraping away diseased bone.
- Otitis** (ō-tī'-tis) [Gr. *ous*, ear; *itis*, inflammation]. Inflammation of the ear. To this term are added the terms *externa*, *media*, *interna*, according as the inflammation affects the external, middle, or internal ear respectively.
- Otorrhœa** (ō-tor-ē'-a) [Gr. *ous*, ear; *rhia*, a flowing]. A discharge from the ear.
- Ovariectomy** (ō-vā-rē-ōt'-ō-mē) [Lat. *ovarium*, ovary; Gr. *temnein*, to cut]. Literally, this term means incision into an ovary, but it is generally used to denote the operation of oophorectomy or removal of the ovary or ovaries.
- Ovaritis** (ō-var-ī'-tis) [Lat. *ovarium*, ovary; Gr. *itis*, inflammation]. Oophoritis. Inflammation of the ovaries.
- Oxaluria** (ōx-āl-ū'-rē-a) [Gr. *oxalis*, sorrel; *ouron*, urine]. A condition in which there is an excessive amount of oxalates in the urine.
- Ozœna** (ō-zē'-na) [Gr. *ozein*, to smell]. A chronic disease of the nose, attended by a foul-smelling discharge.
- Pachy-** [Gr. *pachus*, thick]. A Greek prefix meaning "thick."
- Pachymeningitis** (pāk-ē-mēn-īn-jī'-tis) [Gr. *pachus*, thick; *mēnbra*, membrane; *itis*, inflammation]. Inflammation of the dura mater of the brain or spinal cord.
- Pacquin's cautery**. A cautery consisting of a hollow platinum point heated by benzene vapour.
- Paget's disease**. A chronic disease of the nipple, first described by Sir James Paget, frequently the precursor of cancer.
- Palpation** (pāl-pā'-shun) [Lat. *palpare*, to feel]. A method of physical examination which consists in laying the hand on the body for the purpose of ascertaining the conditions of the organs beneath.
- Paludism** (pāl-ū-dīzm) [Lat. *palus*, a marsh]. Malarial poisoning.
- Panophthalmitis** (pān-ōf-thāl-mī'-tis) [Gr. *pan*, all; *ophthalmos*, eye; *itis*, inflammation]. Inflammation of all the tissues of the eyeball.
- Para-** A Greek prefix signifying "beyond," "beside," "near," "on the other side of," etc.
- Paracentesis** (pār-a-sēn-tē'-sis) [Gr. *para-*; *kentēsis*, puncture]. Puncture of the wall of a cavity to draw off fluid. The term is usually applied to the operation of tapping the abdomen for dropsy.
- Parametritis** (pār-a-mē-trī'-tis) [Gr. *para-*; *metra*, womb; *itis*, inflammation]. Inflammation of the tissues round the uterus.
- Paraphimosis** (pār-a-fī-mō'-sis) [Gr. *para-*; *phimoein*, to bridle]. Retraction and constriction of the prepuce behind the glans penis.



- Paraplegia** (pār-a-plē'-je-a) [Gr. *para-*; *plēgē*, a stroke]. Paralysis of the lower half of the body.
- Paratyphlitis** (pār-a-tif-lī'-tis) [Gr. *para-*; *tuphlon*, cæcum; *itis*, inflammation]. Inflammation of the connective tissue behind the cæcum.
- Paresis** (par-ēs-is) [Gr. *para-*; *ieani*, to let go]. A condition of slight paralysis.
- Paronychia** (pār-ō-nīk'-ē-a) [Gr. *para-*; *onyx*, a nail]. A whitlow; inflammation near a nail.
- Parotitis** (pār-ō-tī'-tis) [Gr. *para-*; *ous*, ear; *itis*, inflammation]. Inflammation of the parotid gland. Mumps is a specific parotitis.
- Pathognomonic** (pāth-ōg-nō-mōn'-ik) [Gr. *pathos*, disease; *gnōmōn*, a judge]. A term applied to signs and symptoms specially characteristic of a disease and which, when present, make the diagnosis certain.
- Pathology** (pāth-ōl'-ō-jē) [Gr. *pathos*, disease; *logos*, discourse]. The science that deals with conditions of the body due to disease.
- Pectoriloquy** (pēk-tor-il'-ō-kwē) [Lat. *pectus*, breast; *loqui*, to speak]. A modification of the voice sound heard in auscultation, in such a way that the words are distinctly heard, and appear to be produced beneath the spot on which the stethoscope is placed. Whispering pectoriloquy means the transmission in this way of whispered words.
- Pediculosis** (ped-ik'-u-lō'-sis) [Lat. *pediculus*, a louse]. The condition of being infested by pediculi or lice.
- Pelvimeter** (pēl-vīm'-ē-tēr) [Lat. *pelvis*, a basin; Gr. *metron*, measure]. An instrument for measuring the pelvis.
- Pemphigus** (pēm'-fig-ūs) [Gr. *pemphix*, a blister]. A skin disease characterised by an eruption of large blebs.
- Percussion** (pēr-kūsh'-ūn) [Lat. *percutere*, to strike through]. A method of physical examination which consists in striking the body lightly either by the finger or by an instrument called a "plexor," in order to ascertain by the sounds thus produced the condition of the organs beneath.
- Perforator** (pēr-fōr'-ā-tor) [Lat. *per*, through; *forare*, to bore]. An obstetric instrument used for boring through the skull of the fœtus to facilitate delivery.
- Peri-** A Greek prefix meaning "around," or "surrounding."
- Periarthritis** (pēr-ē-ar-tēr-ī'-tis) [Gr. *peri-*; *arteria*, artery; *itis*, inflammation]. Inflammation of the external coat of an artery.
- Pericarditis** (pēr-ē-kar-dī'-tis) [Gr. *peri-*; *kardia*, heart; *itis*, inflammation]. Inflammation of the pericardium.
- Perimetritis** (pēr-ē-mē-trī'-tis) [Gr. *peri-*; *metra*, womb; *itis*, inflammation]. A localised inflammation of the peritoneum covering the uterus.
- Perineorrhaphy** (pēr-ēn-ē-or'-rā-fē) [Gr. *perinaion*, perineum; *rhaphe*, suture]. The operation of stitching the perineum for the repair of lacerations, usually those occurring during child-birth.
- Periostitis** (pēr-ē-ōs-tī'-tis) [Gr. *peri-*; *osteon*, a bone; *itis*, inflammation]. Inflammation of the periosteum.
- Perityphlitis** (pēr-ē-tif-lī'-tis) [Gr. *peri-*; *tuphlon*, cæcum; *itis*, inflammation]. A localised inflammation of the peritoneum surrounding the cæcum.
- Pertussis** (pēr-tus'-sis) [Lat. *per*, through; *tussis*, a cough]. Whooping cough.
- Pessary** (pes'-sār-ē) [Gr. *peossos*, a pebble]. An instrument worn in the vagina to remedy displacement of the uterus.
- Petechiæ** (pēt-ē'-kē-ē) [Lat. *petigo*, a scab]. Small red or purple spots on the skin, due to effusion of blood.
- Phagedæna** (fā'-ē-dē'-na) [Gr. *phagein*, to eat]. A form of ulceration of great severity and rapid spread.
- Pharyngitis** (fār-in-jī'-tis) [Gr. *pharunx*, the pharynx *itis*, inflammation]. Inflammation of the pharynx.
- Phenacetin** (fē-nās'-sēt-in) [Gr. *phoenix*, purple-red; Lat. *acetum*, vinegar]. An antipyretic drug derived from coal-tar.
- Phimosi** (fi-mō'-sis) [Gr. *phimos*, a muzzle]. Narrowing of the prepuce so that it cannot be drawn back over the glans penis.
- Phlebitis** (flē-bī'-tis) [Gr. *phleps*, a vein; *itis*, inflammation]. Inflammation of a vein.
- Phlebotomy** (flē-bot'-ō-mē) [Gr. *phleps*, a vein; *temnein*, to cut]. Venesection. Opening a vein for the purpose of abstracting blood.
- Phlegmasia dolens** (flēg-mā'-zē-a dō'-lēnz) [Gr. *phlegmein*, to burn; Lat. *dolere*, to feel pain]. White leg. A painful swelling of the leg due to septic infection after labour.
- Phlegmonous** (flēg-mōn-ūs) [Gr. *phlegmein*, to burn]. A term applied to a very acute, rapidly spreading inflammation of the cellular tissue, characterised by a hard swelling and a marked tendency to result in gangrene.
- Phlyctæna** (flik-tē'-na) [Gr. *phlyctaina*, a blister]. A small vesicle.
- Phosphaturia** (fōs-fat-ūr'-ē-a) [Gr. *phōs*, light; *ouron*, urine]. A condition in which the urine contains an excessive quantity of phosphates.
- Photophobia** (fō-tō-fō'-bē-a) [Gr. *phōs*, light; *phobos*, fear]. A condition in which the patient cannot tolerate light falling on the eye; this is a symptom of inflammation of the eye, especially of iritis.
- Pilocarpine** (pi-lō-kar'-pin) [Gr. *pilos*, a cap; *karpōs*, fruit]. An alkaloid obtained from the leaf of a South American shrub. Taken internally, it gives rise to profuse sweating.
- Pityriasis** (pit-ir-ī'-ās-is) [Gr. *pituron*, bran]. A term given to several skin diseases, characterised by a bran-like desquamation.
- Placebo** (plā-sē'-hō) [Lat. *placere*, to please]. A medicine given merely to please a patient.
- Pleurodynia** (plū-rō-din'-ē-a) [Gr. *pleura*, a rib; *odunē*, pain]. Pain in the intercostal muscles.
- Pleurothotonos** (plū-rō-thōt'-ō-nōs) [Gr. *pleurothen*, laterally; *temnein*, to bend]. A form of spasmodic contraction of the muscles, in which the body is bent to one side.
- Pneumarthrosis** (nū-mar-thrō'-sis) [Gr. *pneuma*, air *arthron*, a joint]. Air in a joint.
- Pneumothorax** (nū-mō-thōr'-āk) [Gr. *pneuma*, air; *thorax*, chest]. The presence of air in the pleural cavity.
- Poliomyelitis** (pōl-lī-ō-mī-ēl'-tis) [Gr. *polios*, grey; Eng. myelitis]. Inflammation of the grey matter of the spinal cord.
- Politzer's bag**. A rubber bag used for inflating the middle ear through the nostril and Eustachian tube.
- Poly-** A Greek prefix, meaning "many" or "much."
- Polyæmia** (pōl-lī-ē'-mē-a) [Gr. *poly-*; *haima*, blood]. Excess of blood.
- Polyuria** (pōl-lī-ūr'-ē-a) [Gr. *poly-*; *ouron*, urine]. An excessive discharge of urine. Permanent polyuria is one of the symptoms of diabetes mellitus.
- Porro's operation**. The removal of the uterus and appendages after Cæsarean section.
- Præcordial** (prē-kor'-dī-āl) [Lat. *præ*, before; *cor*, heart]. Pertaining to the præcordia, the region in front of the heart.
- Presbyopia** (prēz-bē-ō'-pē-a) [Gr. *presbus*, old; *ōps*, eye]. A term used to denote the changes in vision that normally occur in elderly persons. The chief change is a gradual loss of the elasticity of the lens, which diminishes the power of accommodation.



- Primipara** (pri-mip'-ār-a) [Lat. *primus*, first; *parere*, to bear]. A woman in her first labour.
- Probang** (prō'-hāng) [Lat. *probare*, to test]. A thin, flexible rod used for removing foreign bodies from the oesophagus.
- Proctalgia** (prōk'-tal'-ji-a) [Gr. *proktos*, the anus; *algos*, pain]. Pain in the rectum.
- Proctitis** (prōk'-ti'-tis) [Gr. *proktos*, the anus; *itis*, inflammation]. Inflammation of the anus or rectum.
- Pro-** A prefix having the force of "for," "fore," "forth," "forward."
- Prognathous** (prōg'-nā-thūs) [Gr. *pro-*; *gnathos*, a jaw]. Having a protruding lower jaw.
- Prophylactic** (prō-fi-lāk'-tik) [Gr. *pro-*; *phylassein*, to guard]. A term applied to measures that prevent disease.
- Prostatitis** (prōs'-tā-ti'-tis) [Eng. Prostate; *itis*, inflammation]. Inflammation of the prostate gland.
- Prostatorrhœa** (prōs'-tā-tōr'-ē-a) [Eng. Prostate; *rhein*, to flow]. A discharge from the prostate gland.
- Prurigo** (prü-rī'-gō) [Lat. *prurire*, to itch]. A chronic disease of the skin characterised by an eruption of pale papules and intense itching.
- Pruritus** (prü-rī'-tūs) [Lat. *prurire*, to itch]. Itching.
- Psoriasis** (sō-rī'-ās-is) [Gr. *psora*, scurf]. A chronic disease of the skin characterised by the development of red patches covered with white scales, which appear first at the back of the elbows and the front of the knees.
- Ptoxis** (tō'-sis) [Gr. *ptipein*, to fall]. Drooping of the upper eyelid, a condition caused by paralysis of the third cranial nerve, which supplies the muscles that raise the lid.
- Ptyalism** (ti'-āl-izm) [Gr. *ptualon*, saliva]. Salivation. An excessive flow of saliva, a symptom of the excessive use of mercury.
- Purpura** (pur'-pūr-a) [Lat. purple]. A disease characterised by the appearance of purple patches of hæmorrhage under the skin.
- Pyæmia** (pi'-ē'-mi-a) [Gr. *puon*, pus; *haima*, blood]. A form of blood-poisoning characterised by the formation of abscesses in various parts of the body owing to the lodging of emboli containing pus-forming organisms.
- Pyarthrosis** (pi'-ar-thrō'-sis) [Gr. *puon*, pus; *arthron*, joint]. Suppuration in a joint.
- Pyelitis** (pi'-ē-i'-tis) [Gr. *puolos*, a trough; *itis*, inflammation]. Inflammation of the pelvis of the kidney.
- Pyosalpinx** (pi'-ō-sāl'-pinks) [Gr. *puon*, pus; *salpingx*, a tube]. A collection of pus in the Fallopian tube.
- Pyrexia** (pi'-rēks'-ē-a) [Gr. *purexis*, fever]. Fever. The term is sometimes used to denote an elevation of temperature above the normal.
- Pyrosis** (pi'-rō'-sis) [Gr. *pur*, fire]. Water-brash. A form of dyspepsia in which there is a spasmodic pain at the stomach followed by eructations of a watery fluid.
- Pyuria** (pi'-ū'-rē-a) [Gr. *puon*, pus; *ouron*, urine]. The presence of pus in the urine.
- Quartan** (kwor'-tan) [Lat. *quartus*, fourth]. A form of malaria in which the paroxysms recur after an intermission of two days.
- Quintan** (kwin'-tan) [Lat. *quintus*, fifth]. A form of malaria in which the paroxysms recur after an intermission of ninety-six hours.
- Quotidian** (kwō-tid'-ē-ān) [Lat. *quot*, as many as; *dies*, day]. A form of malaria in which the paroxysms recur daily.
- Rachitis** (ra-kit'-is) [Gr. *rhachis*, the spine; *itis*, inflammation]. Rickets.
- Ranula** (rān'-u-la) [Lat. *rana*, a frog]. A swelling beneath the tongue due to the obstruction of the sublingual or sub-maxillary gland, or of a mucous gland.
- Raspatory** (rās'-pā-tō-rē) [Lat. *radere*, to scrape]. An instrument used for removing the periosteum.
- Raynaud's disease**. A nervous disease, chiefly occurring in young women, marked by changes in the extremities of three stages of intensity: (1) local syncope, (2) local asphyxia, (3) local gangrene.
- Rectocele** (rēk'-tō-sēl) [Lat. *rectum*, rectum; Gr. *hēlē*, a tumour]. Prolapse of the rectum into the vagina.
- Retinitis** (rēt-in-i'-tis) [Lat. *retina*, retina; Gr. *itis*, inflammation]. Inflammation of the retina.
- Retractor** (rē-trāk'-tor) [Lat. *retrahere*, to draw back]. An instrument used to draw back the edges of a wound.
- Rhagades** (rāg'-ād-ēz) [Gr. *rhagas*, a crack]. Painful cracks or fissures in the skin.
- Rhinitis** (ri-nī'-tis) [Gr. *rhis*, nose; *itis*, inflammation]. Inflammation of the mucous membrane of the nose.
- Rhinoscope** (ri'-nō-sōp) [Gr. *rhis*, nose; *skopein*, to see]. A nasal speculum, or instrument for examining the cavities of the nose.
- Rhinchus** (rōng'-kūs) [Gr. *rhongchos*, a snore]. A harsh rattling sound heard in auscultation over the bronchial tubes in cases of bronchitis.
- Rigor** (ri'-gor) [Lat. *rigere*, to be cold]. An attack of shivering, usually marking the onset of an acute fever. *Rigor mortis* is a term applied to the muscular rigidity that takes place soon after death.
- Roseola** (rō-zē'-ō-la) [Lat. *roseus*, rosy]. A rose-coloured rash. *Epidemic roseola* is another name for Rôtheln or German measles.
- Rubella** (roo-hēl'-la) [Lat. diminutive of *rubeola*]. German measles, Rôtheln, epidemic roseola.
- Rubeola** (roo-hē'-ō-la) [Lat. *rubeus*, red]. Measles.
- Rupia** (roo'-pi-a) [Gr. *rhupos*, filth]. An eruption characterised by the formation of thick, stratified crusts. It occurs chiefly in tertiary syphilis.
- Salpingectomy** (sāl-pin-jēk'-tō-mē) [Gr. *salpingx*, a tube; *ektomē*, excision]. The operation of removing the Fallopian tube.
- Salpingitis** (sāl-pin-jī'-tis) [Gr. *salpingx*, a tube; *itis*, inflammation]. Inflammation of the Fallopian tube; sometimes used to denote inflammation of the Eustachian tube.
- Sapremia** (sāp-rēm'-ē-a) [Gr. *sapros*, putrid; *haima*, blood]. A form of blood poisoning due to the absorption of the products of putrefaction.
- Sarcoma** (sar-kō'-ma) [Gr. *sarx*, flesh; *oma*, tumour]. A malignant tumour composed of embryonic connective tissue.
- Scabies** (skā'-hī-ēz) [Lat. *scabere*, to scratch]. The itch. A skin disease caused by the *Acarus scabiei*, or itch-mite.
- Scirrhus** (skir'-ūs) [Gr. *skirrhos*, hard]. Hard. A term applied to a hard form of cancer.
- Scleroderma** (sklē-rō-dēr'-ma) [Gr. *sklēros*, hard; *derma*, skin]. A chronic skin disease, in which there is an excessive formation of fibrous tissue leading to hardness and stiffness.
- Sclerosis** (sklē-rō'-sis) [Gr. *sklēros*, hard]. Hardening, especially that due to overgrowth of fibrous tissue.
- Scoliosis** (skō-lē-ō'-sis) [Gr. *skolios*, curved]. Lateral curvature of the spine.

- Scorbutus** (skôr-bû'-tûs) [Low Lat. scurvy]. Scurvy, due to improper diet.
- Scotoma** (skô-tô'-ma) [Gr. *skotos*, darkness]. An area in the visual field from which rays of light are imperfectly perceived, or not perceived at all.
- Scybala** (sib'-äl-a) [Gr. *skubalon*, faecal matter]. Faeces consisting of hard, rounded lumps.
- Seborrhœa** (sêb-ô-rê'-a) [Low Lat., *sebum*, fat; Gr. *rheô*, I flow]. An affection of the sebaceous glands characterised by an excessive secretion of sebum.
- Septicæmia** (sêp-tê-sê'-mé-a) [Gr. *septicôs*, putrid; *haima*, blood]. A form of blood-poisoning due to the presence of micro-organisms in the blood.
- Sequestrum** (sê-kwês'-trûm) [Lat. *sequestrare*, to separate]. A piece of dead bone separated from the living bone.
- Sessile** (sês'-sil) [Lat. *sessilis*, low, from *sedere*, to sit]. Without a stem. A botanical term applied to tumours that are not pedunculated, but are attached by a broad base.
- Seton** (sê'-tn) [Lat. *seta*, a bristle]. A form of counter-irritant, formerly much used, which consists of one or more threads of silk drawn through the skin with a needle.
- Shingles** (shing'-glz) [Corr. of Lat. *cingulum*, a belt]. A popular name for herpes zoster.
- Sinapism** (sin'-âp-izm) [Gr. *sinapi*, mustard]. An application containing mustard.
- Sordes** (sor'-dêz) [Lat. *sordere*, to be dirty]. Brownish crusts that tend to accumulate on the lips and teeth of patients suffering from fever.
- Speculum** (spêk'-û-lûm) [Lat. *specere*, to look]. A bright instrument used to dilate the opening of one cavity in the body to admit of examination.
- Sphacelus** (sfâs'-êl-ûs) [Gr. *sphakelos*, gangrene]. A slough.
- Sphygmograph** (sig'-mô-grâf) [Gr. *sphugmos*, the pulse; *graphein*, to write]. An instrument that records graphically the rate and character of the pulse.
- Splenitis** (splê-nî'-tis) [Gr. *splên*, spleen; *itis*, inflammation]. Inflammation of the spleen.
- Spondylitis** (spôn-dil-i'-tis) [Gr. *spondulos*, a vertebra; *itis*, inflammation]. Inflammation of a vertebra.
- Steatosis** (stê-ât-ô'-sis) [Gr. *stear*, fat]. Fatty degeneration, or an abnormal accumulation of fat.
- Stenosis** (stê-nô'-sis) [Gr. *stenos*, narrow]. A narrowing or constriction.
- Stercoraceous** (stêr-kô-râ'-shus) [Lat. *stercus*, dung]. Faecal, or containing faeces.
- Stomatitis** (stôm-ât-i'-tis) [Gr. *stoma*, mouth; *itis*, inflammation]. Inflammation of the mouth.
- Strabismus** (strâb-iz'-mûs) [Gr. *strabos*, crooked]. Squint.
- Struma** (stroo'-ma) [Lat. *scrofula*]. Scrofula.
- Subluxation** (sûb-lûx-â'-shun) [Lat. *sub*, under; *luxatio*, dislocation]. An incomplete dislocation.
- Subsultus** (sûb-sûl'-tûs) [Lat. *sub*, under; *saltilire*, to leap]. An involuntary twitching of the muscles.
- Succession** (sûk-ûsh'-ûn) [Lat. *succussio*, a shaking]. A method of physical examination which consists in shaking the patient from side to side in order to determine by the sound produced the presence of fluid in a cavity.
- Sudamina** (su-dâm'-in-a) [Lat. *sudor*, sweat]. An eruption of small vesicles occurring in conditions attended with profuse sweating.
- Sycosis** (si-kô'-sis) [Gr. *sycon*, a fig]. An inflammatory disease of the hair follicles of the face, characterised by an eruption of papules and pustules.
- Symblepharon** (sim-blêf'-âr-ôn) [Gr. *syn*, together; *blepharon*, the eyelid]. Adhesion of the eyelids to the eyeball.
- Synarthrosis** (sin-ar-thrô'-sis) [Gr. *syn*, with; *arthron*, a joint]. An immovable joint.
- Synovitis** (šin-ô-vî'-tis) [Synovitis]. Inflammation of a synovial membrane.
- Syringomyelia** (sir-ing-gô-mî-ê'-lē-a) [Gr. *suringx*, a tube; *mudlos*, marrow]. A rare disease of the nervous system characterised by the presence of cavities in the spinal cord.
- Systole** (sis'-tô-lê) [Gr. *sun*, together; *stellein*, to place]. The contraction of the heart.
- Tabes** (tâ'-bêz) [Lat. a wasting]. This word, literally "wasting," is now almost exclusively applied to two diseases: *tabes dorsalis*, or locomotor ataxia, and *tabes mesenterica*, consumption of the bowels, or tuberculous disease of the mesenteric glands.
- Tachycardia** (tâk-ê-kar'-dê-a) [Gr. *tachys*, quick; *kardia*, heart]. An abnormally rapid beating of the heart.
- Tænia** (tê'-nê-a) [Lat. *tænia*, a ribbon]. A tape-worm.
- Talipes** (tâl'-ip-êz) [Lat. *talus*, the ankle; *pes*, the foot]. Club-foot. There are several varieties of this deformity, of which the following are the chief: *Talipes varus*, in which the foot is turned inward; *talipes valgus*, in which the foot is turned outward; *talipes equinus*, in which the heel is lifted up; *talipes calcaneus*, in which the patient walks on the heel alone.
- Taxis** (tâk'-sis) [Gr. *lassein*, to arrange]. A manipulation. The term is applied to a special manipulation for reducing a hernia without operation.
- Tenesmus** (tên-êz'-mûs) [Gr. *teinein*, to stretch]. A symptom of certain diseases of the lower part of the large intestine, consisting of a constant desire to pass faeces, straining at stool, the passage of a little mucus, perhaps blood, but no proper evacuation of faeces.
- Tenotomy** (tên-ôt'-ô-mê) [Gr. *tenon*, tendon; *temnein*, to cut]. The operation of cutting a tendon.
- Tetanus** (têt'-an-ûs) [Gr. *teinein*, to stretch]. Lock-jaw. An infectious disease, due to the tetanus bacillus, characterised by severe spasm of the voluntary muscles.
- Thoracentesis** (thô-râ-sên-tê'-sis) [Gr. *thorax*, chest; *kenêsis*, a piercing]. Puncture of the thorax for the purpose of drawing off fluid.
- Thrombosis** (thrôm-bô'-sis) [Gr. *thrombos*, a clot]. The formation of a *thrombus*—i.e. a clot of blood in a vessel or in the heart.
- Thyroidectomy** (thî-roid-êk'-tô-mê) [Eng. thyroid; Gr. *chlomê*, excision]. The operation of removing the thyroid gland.
- Thyroidotomy** (thî-roid-ôt'-ô-mê) [Eng. thyroid; Gr. *temnô*, I cut]. Incision of the thyroid gland.
- Thyrotomy** (thî-rôt'-ô-mê) [Gr. *thyreos*, a shield; *temnein*, to cut]. Incision of the thyroid cartilage.
- Tinea** (tîn'-ê-a) [Lat., a worm]. Ringworm.
- Tinnitus aurium** (tîn-nî'-tûs aw'-rê-ûm) [Lat. *tinire*, to tinkle]. A humming or ringing in the ears.
- Torsion** (tor'-shûn) [Lat. *torquere*, to twist]. A twisting.
- Torticollis** (tor-tê-côl'-is) [Lat. *torlus*, twisted; *collum*, neck]. Wry-neck; an abnormal position of the head due to the contraction of one or more cervical muscles.
- Toxæmia** (tôx-ê'-mî-a) [Gr. *toxikon*, poison; *haima*, blood]. A condition in which the blood contains poisonous products.
- Tracheotomy** (trâ-kê-ôt'-ô-mê) [Gr. *trachus*, rough; *temnein*, to cut]. The operation of opening the trachea to enable respiration to be carried on. The operation is called *high* or *low* according as the opening is made above or below the isthmus of the thyroid gland.

**Trauma** (traw'-ma) [Gr. *trauma*, a wound]. A wound or injury.

**Trephining** (trē-fī'-ning) [Fr. *tréphine*]. An operation that consists in removing a portion of the skull.

**Trichiasis** (trik-f'-ās-is) [Gr. *thrix*, hair]. A morbid condition in which the eyelids are turned inward so that the eyelashes irritate the eye.

**Trichinosis** (trik-in-ō'-sis). A disease caused by eating pork containing a small worm called *Trichina spiralis*.

**Trismus** (triz'-mūs) [Gr. *triazin*, to gnash]. Lock-jaw; a tonic spasm of the muscles of the jaw.

**Trocar** (trō'-kar) [Fr. *trois*, three; *carri*, side]. An instrument with a sharp point used for puncturing the walls of cavities that contain fluid.

**Tympanites** (tīm-pān-i'-tēz) [Gr. *tumpanon*, a drum]. A distended condition of the abdomen due to the accumulation of gas in the intestines.

**Typhlitis** (tif-lī'-tis) [Gr. *tuphlon*, cæcum; *itis*, inflammation]. Inflammation of the cæcum.

**Tyrotoxicon** (ti-rō-tōk'-sī-kōn) [Gr. *tyros*, cheese; *toxikon*, poison]. A poisonous product sometimes found in cheese.

**Uræmia** (ū-rē'-mī-a) [Gr. *ouron*, urine; *haima*, blood]. A morbid condition due to the retention in the blood of substances that should be excreted in the urine.

**Urethritis** (ū-rē-thrī'-tis) [Gr. *ourēthra*, urethra; *itis*, inflammation]. Inflammation of the urethra.

**Urethrotomy** (ū-rē-thrōt'-ō-mē) [Gr. *ourēthra*, urethra; *temnein*, to cut]. The operation of cutting a urethral stricture. The stricture may be divided from without or within the urethra.

**Urticaria** (ur-tik-ā'-rē-a) [Lat. *urtica*, a nettle]. Nettle-rash.

**Varicella** (vār-is-ēl'-a) [dim. of *variola*]. Chicken-pox.

**Varicocele** (vār-īk-ō-sēl) [Lat. *varix*, a dilated vein; Gr. *kēlē*, a tumour]. A varicose condition of the veins of the spermatic cord.

**Variola** (va-rī'-ō-la) [Lat. *varius*, spotted]. Smallpox.

**Varix** (vā'-riks) [Lat. *varus*, bent]. A varicose vein.

**Venesection** (vēn-ē-sēk'-shun) [Lat. *vena*, a vein; *secare*, to cut]. The operation of opening a vein for the purpose of abstracting blood.

**Verruca** (ver-roo'-ka) [Lat. a wart]. A wart.

**Vertigo** (vēr-tī'-gō) [Lat. *vertere*, to turn]. Giddiness.

**Volvulus** (vōl'-vū-lūs) [Lat. *volvere*, to roll]. A form of intestinal obstruction due to the twisting of a loop of the bowel. It is most common in the sigmoid.

**Vomica** (vom'-ik-a) [Lat. *vomere*, to vomit]. A cavity formed by the gradual destruction of tissue. The term is chiefly applied to a cavity in the lung.

**Xanthoma** (zān-thō'-ma) [Gr. *xanthos*, yellow; *oma*, tumour]. A condition of the skin characterised by the appearance of small flat yellow growths.

**Xanthopsia** (zān-thōp'-sē-a) [Gr. *xanthos*, yellow; *ōps* vision]. A condition in which objects appear yellow it sometimes occurs after taking antonin.

**Zymotic** (zi-mōt'-īk) [Gr. *zumē*, a ferment]. A term applied to the chief infectious fevers.

#### FAHRENHEIT AND CENTIGRADE SCALES

The following table shows the relation of Fahrenheit to Centigrade degrees:—

Centigrade.	Fahrenheit.	Centigrade.	Fahrenheit.
110 ...	230	38 ...	100'4
100 ...	212	37'5 ...	99'5
95 ...	203	37 ...	98'6
90 ...	194	36'5 ...	97'7
85 ...	185	36 ...	96'8
80 ...	176	35'5 ...	95'0
75 ...	167	35 ...	95'0
70 ...	158	34 ...	93'2
65 ...	149	33 ...	91'4
60 ...	140	32 ...	89'6
55 ...	131	31 ...	87'8
50 ...	122	30 ...	86
45 ...	113	25 ...	77
44 ...	111'2	20 ...	68
43 ...	109'4	15 ...	59
42 ...	107'6	10 ...	50
41 ...	105'8	+ 5 ...	41
40'5 ...	104'9	0 ...	32
40 ...	104'0	- 5 ...	23
39'5 ...	103'1	-10 ...	14
39 ...	102'2	-15 ...	+ 5
38'5 ...	101'3	-20 ...	- 4

To convert Fahrenheit into Centigrade, subtract 32, multiply the remainder by 5, and divide the result by 9.  
To convert Centigrade into Fahrenheit, multiply by 9, divide by 5, and add 32.

#### RELATION OF ENGLISH WEIGHTS AND MEASURES TO THE METRIC SYSTEM

1 grain	= 64'8 milligrammes
1 ounce	= 28'3 grammes
1 lb.	= 453'6 grammes
1 gramme	= 15'432 grains
1 kilo	= 2 lb. 3 oz.
1 minim	= 0'059 cubic centimetre
1 fluid drachm	= 3'5 cubic centimetres
1 fluid ounce	= 28'39 cubic centimetres
1 pint	= 567'9 cubic centimetres
1 cubic centimetre	= 16'9 minims
1 litre	= 35'2 fluid ounces
1 inch	= 2'54 centimetres
1 foot	= 30'48 centimetres
1 yard	= 91'44 centimetres
1 centimetre	= 0'39 in.
1 metre	= 39'37 in.

To convert grammes into ounces avoirdupois, multiply by 10 and divide by 283.

To convert litres into pints, multiply by 88 and divide by 50.

To convert kilos into pounds, multiply by 1,000 and divide by 454.



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